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EPA Region 5 Records Ctr.



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**SITE ASSESSMENT REPORT
FOR
FROST MANUFACTURING COMPANY
KENOSHA, KENOSHA COUNTY, WISCONSIN
TDD: S05-9606-022
PAN: 6N2201SI**

January 27, 1997

Prepared for:

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Date: 1/27/97



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1. Introduction

The United States Environmental Protection Agency (U.S. EPA) has tasked the Superfund Technical Assessment and Response Team (START) contractor Ecology and Environment, Inc. (E & E), under Technical Direction Document (TDD) S05-9606-022 to assess site conditions and threats to human health and the environment at the Frost Manufacturing Company (FMC) site, located in Kenosha, Kenosha County, Wisconsin.

2. Background

2.1 Site Description

The FMC site is located at the southeast corner of the intersection of 14th Avenue and 65th Street, 6523 14th Avenue, in Kenosha, Kenosha County, Wisconsin. The geographic coordinates of the site are: latitude 42°34'29.1"N; longitude 87°49'36.4"W (Figure 2-1). The site is comprised of 4.75 acres of land, with an adjacent 0.41 acres used for parking. Currently, the site is an inactive plumbing supply manufacturer.

The site is comprised of the brass foundry building, located on the northwest portion of the site; the main plant building where the plating operations and production processes occurred, located south of the foundry building; four underground storage tanks (USTs) for fuel oil, three located in the alley east of the main plant and one located south of the brass foundry building; a carport located between the brass foundry building and the main plant building; and three storage sheds and a garage, located east of the main plant building and west of the Union Pacific Railroad (UPRR) (formerly the Chicago and Northwestern Railroad). The brass foundry building is in good condition and all equipment has been removed from the building, leaving several pits. The brass foundry building consisted of six main areas: a core department, a grinding department, a mold department, a link belt shakeout, a melt department, and a boiler room (Figure 2-2).

The main plant building was constructed of brick, with the exception of the steel warehouse addition on the southern end of the building. The new addition contained a warehouse area, the wastewater pretreatment system, the treatment area, product storage, and loading docks. The northern part of the main plant building contained the production process area and offices. The production process area consisted of an annealing furnace, metal drawing machines, a plating area, an electropolish and stripping area, and a buffing process area. The roof in several areas of the older parts of the main plant building leaked during precipitation events. Pieces of ceiling insulation from several areas of the older parts of the main plant building had fallen to the floor.

Three sheds and a garage were located along the eastern side of the site. The southernmost shed is constructed of wood. The next two sheds to the north were constructed of steel and concrete. The sheds were used to store old equipment and had some equipment, parts, and miscellaneous containers. All sheds were in fair condition. The garage was located to the north of the sheds and is constructed of concrete block. The garage was used to store foundry material and was empty, except for a dismantled engine (Figure 2-2).

The site is bordered by the UPRR line to the east, 14th Avenue to the west, 65th Street to the north, and Becker Inc., property to the south. The site topography is relatively flat. The site is located in a residential/heavy industrial area. The population of Kenosha is 80,352 persons according to the 1990 U.S. Census. The City of Kenosha relies on Lake Michigan for its water supply. The Wisconsin Department of Natural Resources (WDNR) records indicate that there are no water supply wells on the site. There are no known potable water supplies in the area.

2.2 Site History

The FMC site has been in use since 1902, as a manufacturer of plumbing supplies, primarily copper tubing. The company operating the facility was incorporated in the State of Wisconsin November 3, 1902, as F.P. Incorporated, and administratively dissolved June 18, 1996. The last annual report filed by the company was for 1993.

The brass foundry building was used by the City of Kenosha as the City garage and repair shop from 1941 through 1955. It is not known what the building was used for prior to 1941. FMC's brass foundry building was in use from 1956 until 1991, for the manufacture of leaded brass parts. In September 1991, the leaded brass foundry ceased operations. WDNR records indicate that approximately 1,120 cubic yards of foundry sand were generated at the site between 1986 and 1991.

The remainder of the main facility (plating) has been inactive since 1994. FMC manufactured copper tubing, chrome-plated plumbing trim, swimming pool deck equipment, and leaded-brass castings. In 1987, a wastewater pretreatment system was completed to meet federal pretreatment standards for metal finishing under the Code of Federal Regulations (CFR) 443.

Products manufactured at the FMC site consisted of plumbing fittings and fixtures, brass goods, specialized plumbing fittings, heat exchanger fittings, and swimming pool components. In 1980, FMC manufactured 550,000 square feet per year (sq ft/yr) chrome plating; 700 sq ft/yr hard chrome plating; 440,000 sq ft/yr electropolishing; 50,000 sq ft/yr bright dipping; 550,000 sq ft/yr

nickel plating; and 550,000 sq ft/yr copper plating. The processes employed in the manufacturing of these products included chrome plating, hard chrome plating, electropolishing, bright dipping, nickel plating, and copper plating. Raw materials used in the manufacturing of these products were: brass tube, sheet brass, brass ingot, copper tube, stainless steel tube, and stainless steel sheet. Chemicals utilized in the manufacturing processes included: sulfuric acid, hydrochloric acid, nitric acid, phosphoric and sulfuric acid (Batelle #2067), potassium cyanide, chromic acid, nickel chloride, nickel sulfate, boric acid, and prepared cleaners (Oxy-prep #176, #157, #274, #293; Udylyte).

The facility was a large quantity generator of hazardous wastes regulated under the Resource Conservation and Recovery Act (RCRA) and notified the U.S. EPA on May 4, 1981. The U.S. EPA hazardous waste generator identification number for FMC was WID006090286. Hazardous wastes generated on site were foundry sand and buffing dusts; which are considered D008 lead from the leaded-brass foundry, and F006 wastewater treatment sludges from electroplating operations. Other generated hazardous waste included spent solvents.

A large quantity generator inspection was conducted by WDNR on September 24, 1984, at the facility. On October 16, 1984, FMC received a Notice of Noncompliance. Deficiencies included failure to mark containers with accumulation start dates, waste manifests without facility identification number, lack of weekly inspection of containers for leaks and defects, no written Contingency Plan and emergency procedures, and no program to train employees in the handling of hazardous wastes and emergencies.

On February 13, 1985, WDNR representatives met with the FMC officials to discuss progress on the Notice of Noncompliance. WDNR requested a plant layout figure be added to the Contingency Plan and that the employee training program still needed to be implemented. On April 11, 1985, WDNR submitted a letter notifying FMC that all required corrections had been made and the company was in compliance.

On October 31, 1988, a large quantity generator inspection of the FMC facility was conducted by WDNR. FMC received a Notice of Noncompliance. On December 13, 1988, WDNR notified FMC that the required corrections were made and the facility was in compliance.

On September 28, 1993, a large quantity generator inspection of the FMC facility was conducted by WDNR. As a result of the inspection, FMC received several Notices of Noncompliance.

On October 6, 1993, WDNR conducted a second inspection to collect samples of the foundry sand. WDNR collected two samples of the foundry sand; the first sample was collected near the south blowmatic molder, and the second sample was collected near the eastern end of the building by the shaker area. Both samples were analyzed by the Wisconsin State Laboratory of Hygiene for Toxicity Characteristic Leaching Procedure (TCLP) lead. Both sample results were 37 micrograms per liter ($\mu\text{g/L}$) TCLP lead. The samples were split with FMC. FMC had their samples analyzed for TCLP lead by CBC Environmental Laboratories (CBC) of Oak Creek, Wisconsin. The CBC analytical result for the shakeout area was 37 $\mu\text{g/L}$ and the south blowmatic molder sample result was 28 $\mu\text{g/L}$. The analyses confirmed that the waste foundry sand is a hazardous waste (D008), due to TCLP lead results greater than 5 $\mu\text{g/L}$. FMC estimated that approximately 20 cubic yards of waste foundry sand was present in the foundry building. The foundry sand was removed during closure activities of the foundry building.

To comply with the WDNR closure performance standards, S.NR685.05 (1), May 1994, FMC contracted the services of Sigma Environmental Services, Inc. (Sigma), to prepare a Closure Plan for the brass foundry building. The Closure Plan for the brass foundry building was completed during September of 1994. WDNR approved the Closure Plan of the brass foundry building on February 2, 1995. During closure activities of the foundry building, 15 cubic yards of D008 hazardous wastes were collected and shipped to the Chemical Waste Management stabilization facility located in Menomonee Falls, Wisconsin.

The plating facility has been inactive since late 1994. According to a former FMC employee interviewed by WDNR, Mr. Lancote, the automatic plating line was installed in 1957, replacing an older manual plating system. Waste from plating tank clean-out was sent with used drums (1" depth of waste in each drum) for disposal, and the wastewater went through a pretreatment system prior to discharge to the sanitary sewer. In December of 1985, FMC discontinued the use of cyanide in the plating operations. Mr. Lancote confirmed the locations of the plating, plating chemical storage, polishing, press machine and maintenance, pipe bending, inspection, warehouse, and wastewater pretreatment system areas.

As of June 30, 1996, FMC owed the County of Kenosha \$190,557 in back property taxes. The City and County of Kenosha, in cooperation with WDNR, have selected the FMC site as part of the WDNR Brownfields Environmental Assessment Pilot (BEAP) program. The BEAP program goal for FMC is to investigate the potential contamination and help bring the property back into productive commercial or industrial use, or to develop the property into a multi-use area.

On May 16, 1996, the Kenosha Fire Department responded to a fire at the FMC facility. Vandals had set fire to the office area of the main plant building. The offices were extensively damaged by the fire.

On May 20, 1996, representatives from the Wisconsin Division of Health (WDH), Bureau of Public Health, WDNR, Kenosha County Health Department, and the City of Kenosha visited the FMC site to determine possible health threats posed by the abandoned facility in a residential neighborhood. WDH observed evidence of people trespassing by climbing the fence on the eastern side north shed by the railroad and/or by climbing through an open shed window. Trespassers entered the main plant by using a swimming pool ladder to access the plant roof, and another pool ladder from the roof to access an open area in the plant.

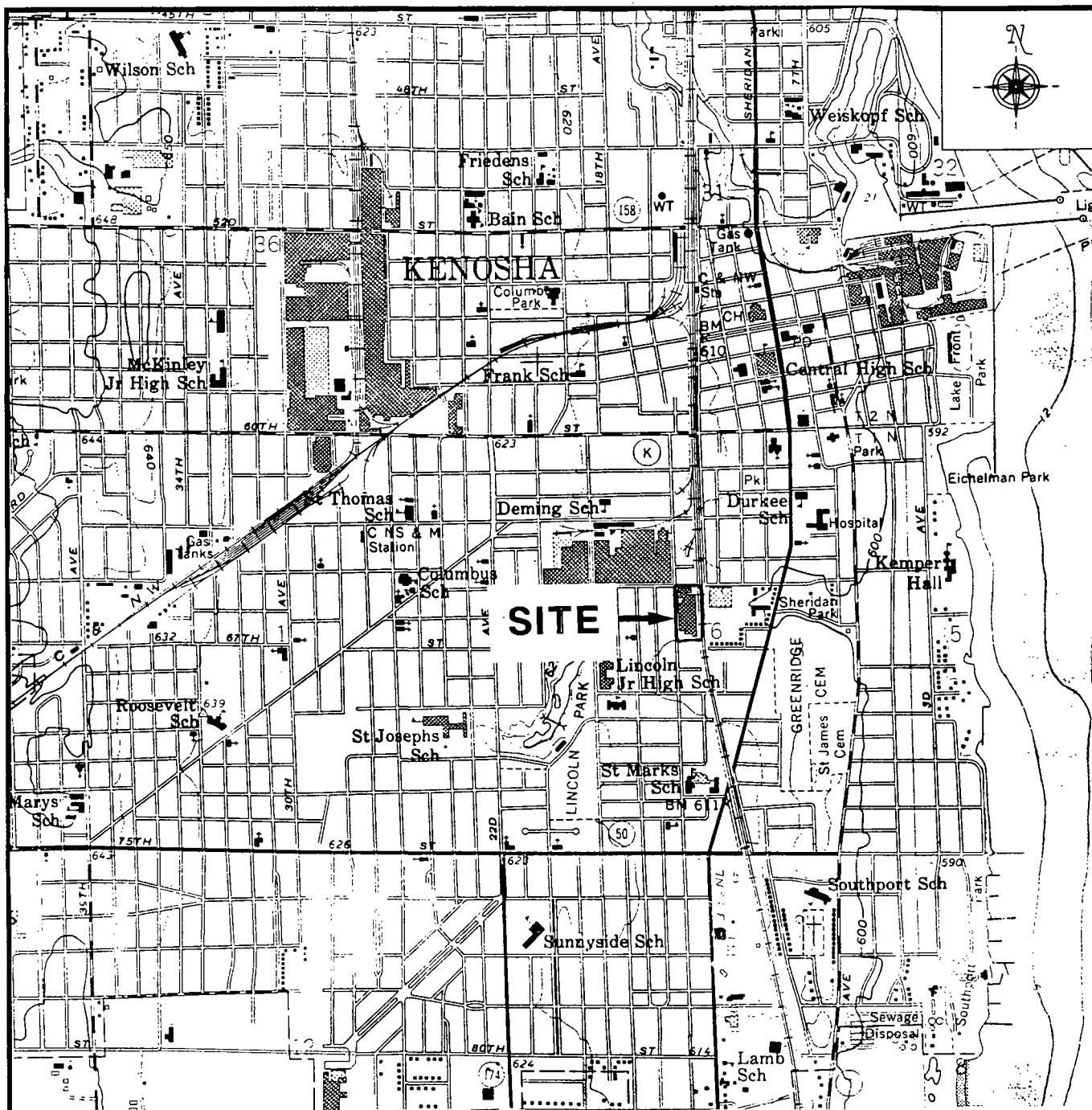
Chemical hazards were also observed by WDH at the FMC site. In several areas in the main plant, greenish powdered chemicals had been spilled. Barrels of what appeared to be plating waste had been tipped onto the floor. In another room, vandals had opened a valve on an oil tank, which created a slippery oil-covered floor. A number of barrels with unknown contents were observed throughout the buildings. The plating area had plastic coverings over areas where plating operations occurred.

Physical hazards were noted by WDH at the FMC site. The foundry building contained several pits with dimensions of 4 feet wide and 4 feet deep. The main plant contains several sumps with standing water. In the plating area there were sumps containing standing liquids.

Inhalation exposure is an issue at the FMC site. Air quality problems may occur from the spilled plating wastes. Personnel in the WDNR investigation group noted an odor of sulfuric acid. A recent fire in the office area left the odor of smoke. No odors were noted outside of the buildings.

Ingestion exposure is also a potential concern. The threat of trespassers coming into contact with contaminants and unknowingly ingesting the contaminants could be a problem.

On June 17, 1996, WDNR requested that the U.S. EPA Region 5 Emergency Response Branch conduct a removal assessment for a time-critical removal action at the FMC site. A joint site reconnaissance was conducted on July 2, 1996, by U.S. EPA On-Scene Coordinator (OSC) Rey Rivera and WDNR representative John Burnett.



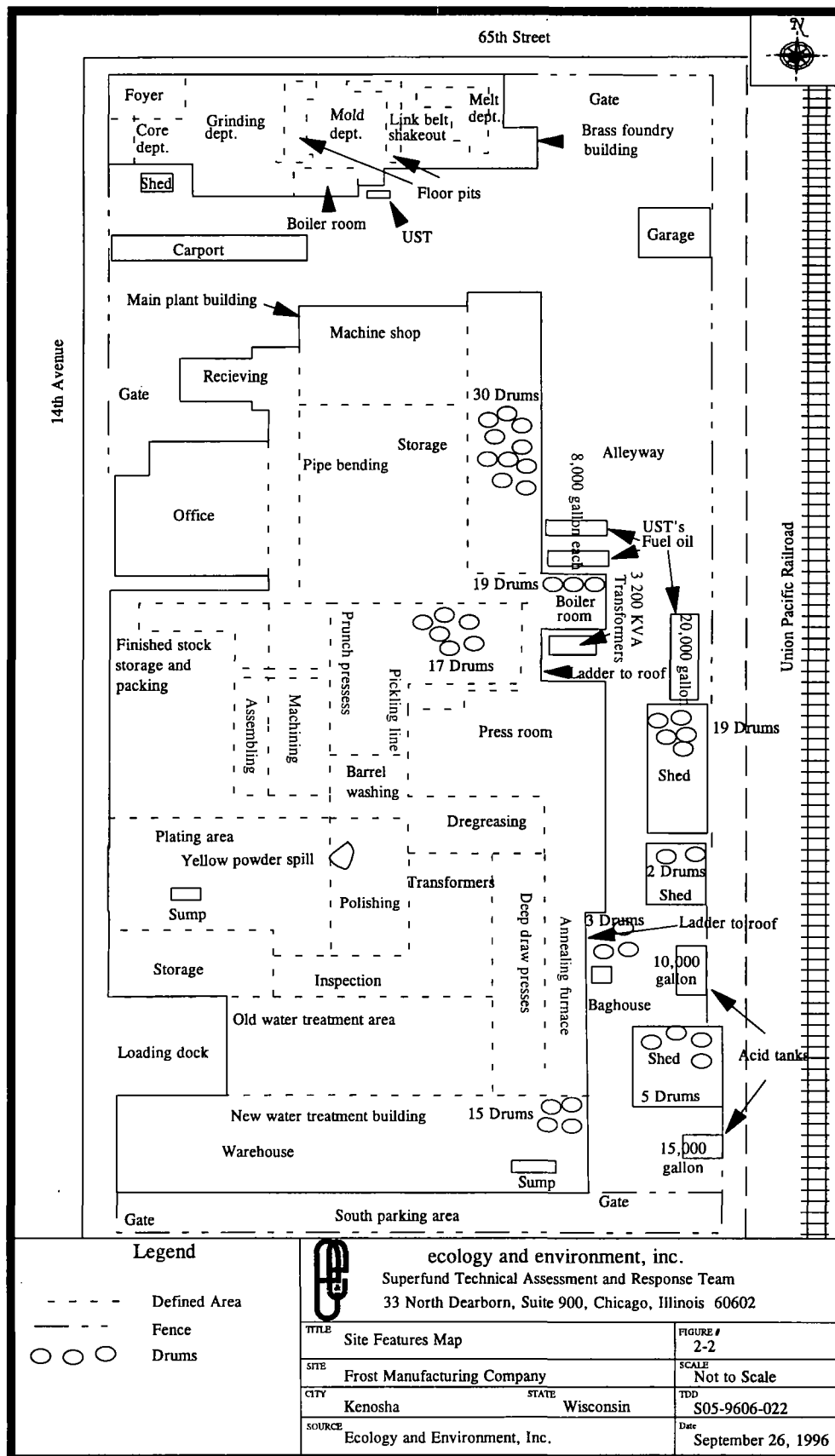
Quadrangle Location



ecology and environment, inc.

Region 5 - Superfund Technical Assessment and Response Team
33 North Dearborn, Chicago, Illinois 60602

TITLE	Site Location Map	FIGURE #	2-1
SITE	Frost Manufacturing Company	SCALE	1:24,000
CITY	Kenosha	STATE	Wisconsin
SOURCE	U.S.G.S. Topographic Map, 7.5' Series Kenosha, Wisconsin Quadrangle	TDD	S05-9606-022
		DATE	1958
		REVISED	1971



3. Site Assessment

START member John Nordine and U.S. EPA OSC Rey Rivera mobilized to the FMC site on July 24, 1996, to conduct a site assessment. Keith Lesniak of U.S. EPA, John Burnett from WDNR, and Sharon Krewson from the City of Kenosha, participated in the site assessment. The site assessment included the collection of nine samples (four liquid and five solid), air monitoring, and photodocumentation. The weather was partly cloudy, 80° F, and the wind was from the northwest at 10 miles per hour. The weather changed to rain in the afternoon.

A site safety meeting was conducted and hazards associated with the FMC site were discussed. A site reconnaissance was conducted to observe site conditions and determine sample locations (Figure 3-1). During this site reconnaissance, site features were photographed (Appendix A). Air monitoring was conducted using a 10.2 eV HNU photoionization detector (PID) for screening organic vapors. Organic vapor readings monitored throughout the site with the HNU were either below or at the background level of 1 part per million (ppm). Sampling activities were conducted in Level B protective equipment.

During the reconnaissance, nine sample locations were marked and numerous observations were made. Two transformer areas were located on the east side of the main plant. All utilities at the FMC site had been turned off by the City of Kenosha. Four USTs were located by their stand pipes, three in the alley east of the main plant and one south of the brass foundry building. According to WDNR file information, one UST capacity was 20,000 gallons, two were 8,000 gallons, and one was of unknown capacity.

Several areas of the FMC site showed signs of vandalism. The lock on the foundry building door had been pried off. Windows were broken in all of the buildings. In the alley behind the main building, several 55-gallon drums had been tipped over, releasing their contents to a storm drain. Most of the sheds showed signs of vandalism; anything left in the sheds had been thrown to the ground. In the boiler room, vandals had opened several 55-gallon drums of "Benzene Oil", which released the oil onto the floor and into a floor drain. A yellow powder had been spilled on the floor

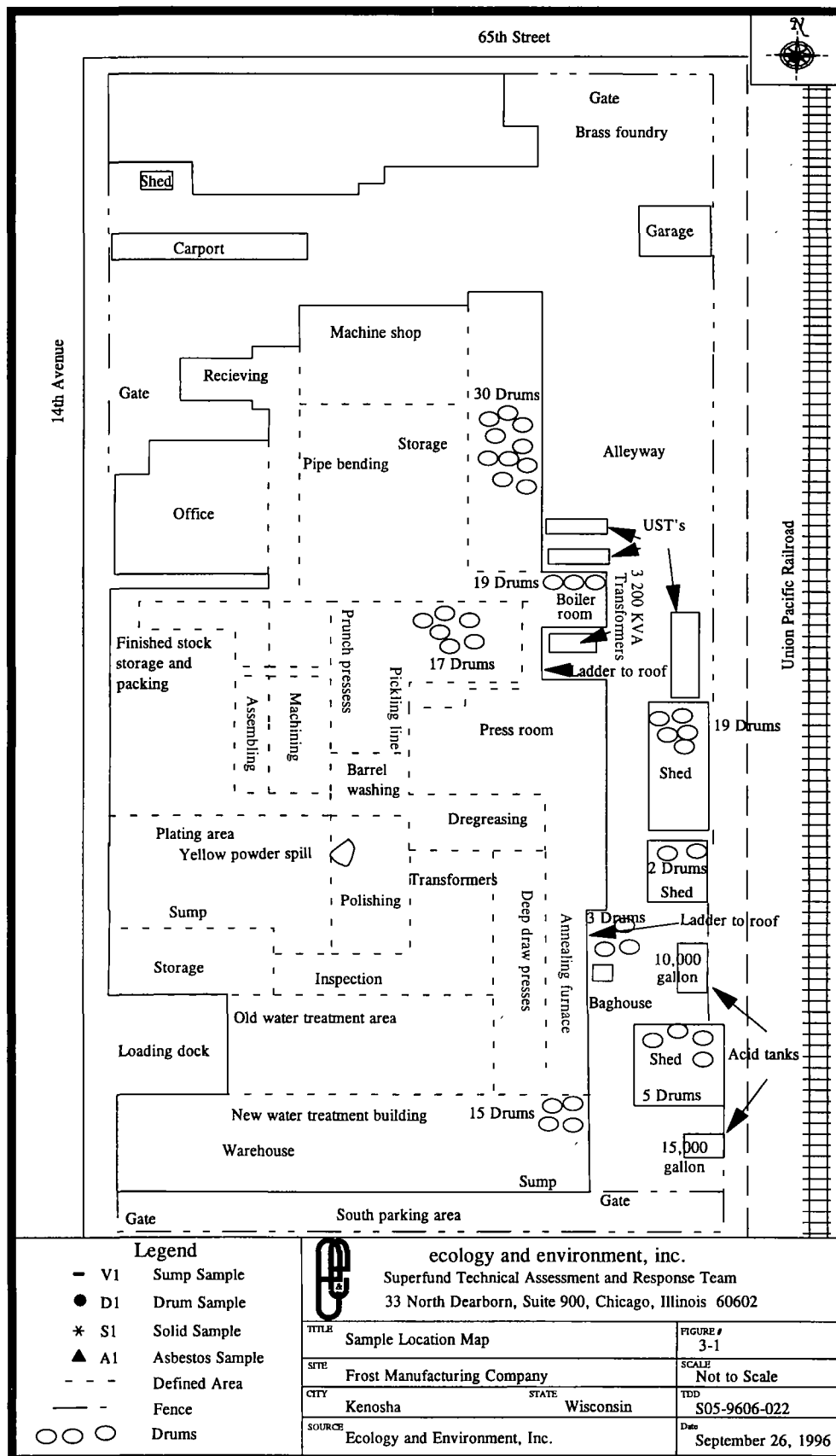
by the entrance to the plating area. In a room near the annealing furnace, two white poly 55-gallon drums had been tipped over; the first drum contained a bright green liquid and solid with a pH of 0 standard units (S.U.). The remaining drum contained a grey semi-solid material. Vandals had set fire to the office area of the plant.

Equipment used for sampling activities included trowels and disposable bailers and spoons. All equipment was decontaminated prior to use. Equipment was scrubbed with a solution of Alconox and rinsed with distilled water. The equipment was thoroughly rinsed with distilled water and air dried. Site entry equipment did not indicate any readings above background levels during the collection of environmental samples.

Samples designated by "V" were collected from sumps; samples designated by "S" were collected from solids; samples designated by "D" were collected from 55-gallon drums; and the sample designated by "A" was suspected of containing asbestos. Sample V1 was a liquid collected a sump located in the new water treatment area. Three samples, V2, S1, and S2, were collected from the plating area; sump Sample V2 was collected from liquid in the plating room sump, solid Sample S1 was collected from a yellow powder spilled on the plating room floor, and Sample S2 was collected from green solids near the floor grating system in the plating room. Samples S3, S4, D1, and D2 were collected from a room where thirty 55-gallon drums were stored; Sample S3 was collected from a green solid spilled from an overturned white 55-gallon poly drum; Sample S4 was collected from a grey semi-solid white material spilled from an overturned white 55-gallon poly drum; Sample D1 was collected from a dark green liquid in an 55-gallon poly drum, with a field pH test of 0; and Sample D2 was a black liquid collected from a 55-gallon poly drum, with a field pH test of 10 to 11. Asbestos Sample A1 was collected from pieces of tile that had fallen from the ceiling near the annealing furnace.

All on-site activities concluded after the completion of sampling activities. The samples were picked up by a courier from VOC Analytical, who delivered the samples to the laboratory, VOC Analytical, of Naperville, Illinois. An Office of Solid Waste and Emergency Response QA level II data package was requested under analytical TDD S05-9607-807.

Analytical results were received on August 9, 1996. All of the samples were analyzed for total RCRA metal and TCLP metals concentration. Samples S1, S2, S3, D1, and D2 were analyzed for pH; Sample S4 was analyzed for cyanide; Samples V1 and V2 were analyzed for volatile organic compounds; and Samples V1, V2, S4, D1, and D2 were analyzed for semivolatile organic compounds.



4. ANALYTICAL RESULTS

The sample results are presented in Tables 4-1, 4-2, 4-3, and 4-4. The TCLP chromium concentrations detected in Samples S3 and D1 exceeded the regulatory requirements of 5 milligrams per liter (mg/L). Samples S2, S3, and D1 exhibit the characteristic of corrosivity, with a pH below 2. The validated QA/QC analytical package is included in Appendix B.

Table 4-1
CYANIDE, pH, and TOTAL METALS ANALYTICAL RESULTS
FROST MANUFACTURING COMPANY
JULY 24, 1996

Sample Identification	Parameter									
	Cyanide (mg/kg)	pH (S.U.)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)
S1	NA	4.5	13	270	3.8	1,600	700	BDL	BDL	1.4
S2	NA	1.0	14	49	BDL	3,500	130	BDL	BDL	BDL
S3	NA	0.0	46	1.5	BDL	6,900	50	0.18	BDL	1.3
S4	BDL	NA	15	43	BDL	4,000	950	BDL	BDL	BDL
D1	NA	0.0	BDL	BDL	BDL	9,000	BDL	BDL	BDL	BDL
D2	NA	8.0	BDL	0.24	BDL	19	1.2	0.0041	BDL	BDL

Key:

NA = Not analyzed.

BDL = Below detection limit.

mg/kg = Milligrams per kilogram.

S.U. = Standard units.

Source: VOC Analytical, Naperville, IL. Analytical TDD S05-9606-022.

<p align="center">Table 4-2</p> <p align="center">TCLP METALS ANALYTICAL RESULTS</p> <p align="center">FROST MANUFACTURING COMPANY</p> <p align="center">JULY 24, 1996</p>		
Sample Identification	Parameter	
	Chromium (mg/L)	Lead (mg/L)
S1	0.35	BDL
S2	0.60	NA
S3	400	NA
S4	BDL	BDL
D1	9,000	NA
D2	NA	NA

Key:

NA = Not analyzed.

BDL = Below detection limit.

mg/L = Milligrams per liter.

Source: VOC Analytical, Naperville, IL. Analytical TDD S05-9606-022.

<p>Table 4-3</p> <p>VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS</p> <p>FROST MANUFACTURING COMPANY</p> <p>JULY 24, 1996</p> <p>(units = $\mu\text{g}/\text{kg}$)</p>		
Parameter	Sample Identification	
	V1	V2
2-Butanone	0.13	BDL
Chloroform	0.0060	BDL
4-Methyl-2-pentanone	0.080	BDL
Toluene	0.080	BDL
Styrene	0.0090	BDL

Key:

$\mu\text{g}/\text{kg}$ = Micrograms per kilogram.

BDL = Below detection limit.

Source: VOC Analytical, Naperville, IL. Analytical TDD S05-9606-022.

<p align="center">Table 4-4</p> <p align="center">SEMIVOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS</p> <p align="center">FROST MANUFACTURING COMPANY</p> <p align="center">JULY 24, 1996</p> <p align="center">(units = $\mu\text{g/kg}$)</p>					
Parameter	Sample Identification				
	V1	V2	S4	D1	D2
bis(2-Ethylhexyl)phthalate	2,300	BDL	4.5	130	BDL
di-n-Octyl phthalate	240	BDL	BDL	BDL	BDL

Key:

$\mu\text{g/kg}$ = Micrograms per kilogram.

BDL = Below detection limit.

Source: VOC Analytical, Naperville, IL. Analytical TDD S05-9696-022.

5. DISCUSSION OF POTENTIAL THREATS

Conditions present at the FMC site that warrant an appropriate removal action as set forth in paragraph (b) (2) of Section 300.415 of the National Oil and Hazardous Substances Contingency Plan (NCP) are:

- **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.** The FMC site is located in an industrial and residential area. The industrial buildings are surrounded by a chain-link fence; however, this is not sufficient to prevent access by children, animals, and vandals. Elevated concentrations of TCLP chromium were detected in Samples S3 and D1 at 400 and 9,000 mg/L, respectively. Chromium is a cumulative toxicant, and the human exposure conditions of most concern are long-term exposure to elevated levels in the diet. Samples S2, S3, and D1, which had pH levels of 1.0, 0.0, and 0.0, respectively, exhibit the characteristic of corrosivity as defined by paragraph (a)(1) of 40 CFR Section 261.21 of the NCP; it is aqueous and has a pH of less than or equal to 2 or greater than or equal to 12.5; or paragraph (2), a solid waste that exhibits the characteristic of corrosivity has the EPA Hazardous Waste Number of D002.
- **Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.** Samples collected during the site assessment indicate that hazardous materials are present on site. Approximately eighty-four 55-gallon drums, two 30-gallon drums, fourteen 5-gallon buckets, three 1-gallon pails, and 11 sumps were found on site. Sample results of some of the drum and vat contents indicate the presence of plating wastes. Several open 55-gallon drums of flammable liquids, acids, and unknown contents were observed in the main plant building and in some of the sheds on site. The drums pose a potential threat of release. There are three USTs located in the alley east of the main plant building and one UST located south of the brass foundry building that were used for fuel oil storage.

The UST capacities are two at 8,000 gallons, one at 28,000 gallons, and one tank of unknown volume. The tanks were not sampled during the assessment.

- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.** The roof of the facility leaks during precipitation events; therefore, the possibility exists that sumps, pits, and drums that were open could overflow due to events of heavy precipitation. Freezing temperatures during winter months may cause a rupture of containers at the site, resulting in a release.
- **The threat of fire or explosion.** The office area of FMC was set on fire by vandals on May 16, 1996. Should another fire occur, the potential for a rupture of an on-site drum or container exists. The resulting release would pose health risks to nearby residents.
- **The unavailability of other appropriate Federal or State response mechanisms to respond to the release.** This factor supports the proposed actions at FMC because WDNR or local officials do not have the necessary resources to respond to an emergency situation.

Based on the analytical results and site conditions, mitigative actions are necessary at the FMC site to abate potential and imminent threats to human health and the environment posed by hazardous conditions present at the site.

6. PROPOSED REMOVAL ACTIONS

The preferred removal action to mitigate threats associated with the FMC site consists of off-site treatment and disposal of liquid and solid wastes, and disposal of nonhazardous solid wastes at a landfill. The removal actions described in this report directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the facility which may pose an imminent and substantial endangerment to public health and safety, and to the environment. The removal action at the FMC site would include consolidating and staging debris; conducting sampling and compatibility testing on all drums, tanks, pits, sumps, and miscellaneous containers; conducting bulk testing; bulking all large wastestreams; preparing composite samples and submitting the samples for disposal bids; transporting waste off site to disposal facilities; conducting soil and concrete sampling; and excavation and disposal of contaminated soil and concrete, if necessary. An estimate for conducting a removal action at the FMC site totalling \$1,020,507 was prepared using the Removal Cost Management System (RCMS) Cost Projection Module, version 4.2 (Appendix C). The following assumptions were made when preparing the estimate:

- The project will be conducted in phases, the first of which will include preparation of a site safety plan, mobilization of personnel and equipment, container sampling, compatibility and bulk testing, waste consolidation, disposal bidding, and a concrete and soil extent of contamination (EOC) study. This phase is expected to take approximately 60 working days. The second phase will include excavation of any contaminated soil and concrete, and transportation and disposal of all wastestreams. A total of 30 working days will be required for this phase.
- The Emergency Response Cleanup Services (ERCS) contractor rates will be used for cleanup contractor personnel and equipment costs.
- ERCS contractor personnel will consist of one response manager, one foreman/equipment operator, one field clerk, and five laborers. The START contractor will include one geologist. One U.S. EPA OSC will be on site at all times.

- Wastestreams will include acidic liquids; base/neutral liquids; debris, including concrete (contaminated and noncontaminated); combustible liquids; and RCRA-empty containers.
- Volumes for liquid wastes were based upon a worst-case scenario, assuming all tanks, drums, and pits were full.
- All plating waste will be shipped to disposal facilities for treatment. The mixed acids wastestream (9,500 gallons) will be shipped in bulk to Clean Harbors in Cincinnati, Ohio, at a unit cost of \$0.65 per gallon and a transportation charge of \$1,500 per load (2 loads). Base/neutral liquids (2,000 gallons) will be shipped in bulk to Heritage in Indianapolis, Indiana, at a unit cost of \$0.75 per gallon, and a transportation cost of \$1,300 per load (1 load). Combustible liquids (76,000 gallons) will be shipped in bulk to Heritage in Lemont, Illinois, at a unit cost of \$0.60 per gallon, and a transportation cost of \$500 per load (15 loads).
- Concrete and soil volumes were estimated using the plating area of the building (30,000 square feet) with an excavation depth of 6 inches. An additional 25% contingency was added to account for soil contamination beneath the concrete. Based upon file information, this cost estimate assumes that contaminated soil contains chromium and lead, which would require treatment prior to landfilling. It is assumed that the concrete and soil will be transported to the Chemical Waste Management (CWM) Adams Center Landfill for treatment and disposal at a cost of \$100 per cubic yard and \$1,500 per load for transportation.
- Nonhazardous debris and RCRA-empty drums is assumed to be a special waste. A total volume of 60 cubic yards was assumed to be transported to a permitted local landfill at a cost of \$20 per cubic yard and a transportation cost of \$200 per load.

Appendix A

Photodocumentation



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** East
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Sign on building face "Frost Co. Founded 1902."



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** South
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: North gate of Frost Manufacturing Company. Note the gate is locked, but still accessible.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Southwest
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: North side of the brass foundry building along 66th Street.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** West
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: The west front of the brass foundry building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Southwest
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: View of the west side of the main plant building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** East
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: View of the loading dock area of the main plant building.



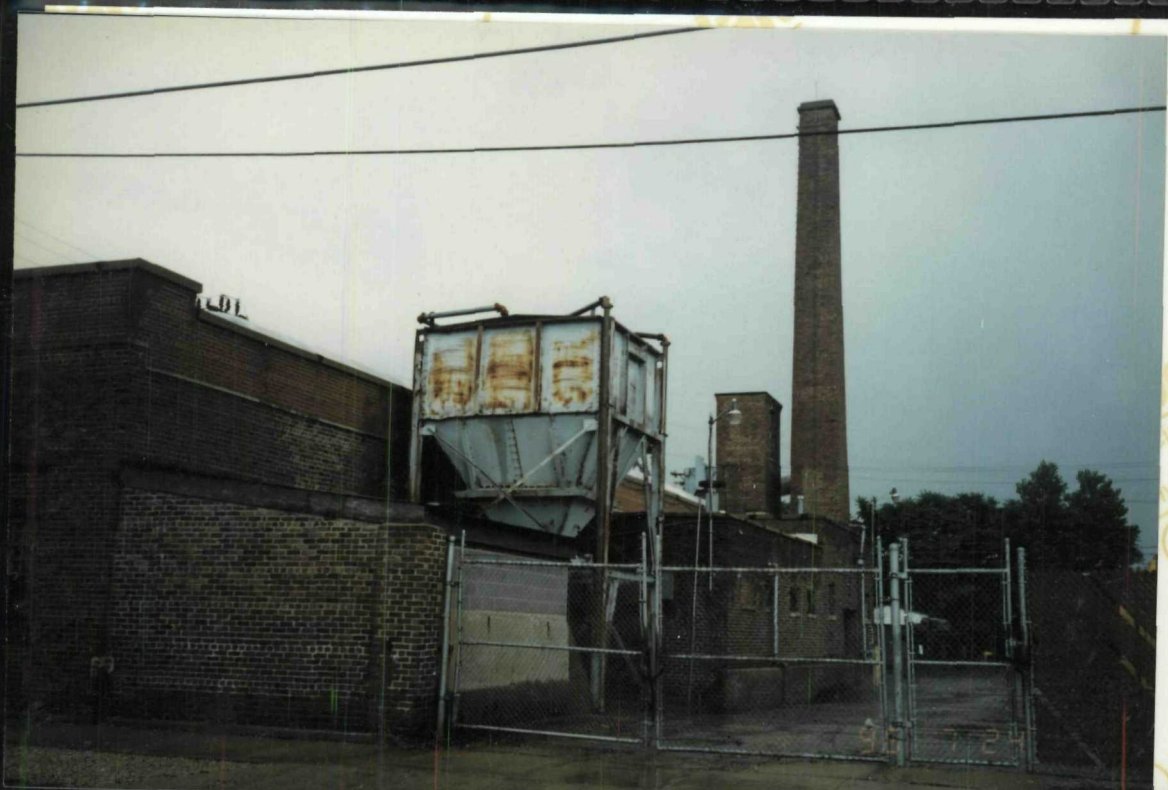
Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Southeast
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: View of the southwest end of the main plant building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** East
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: The south gate was located along 14th Avenue. Note that access is possible even with the gate locked.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Northeast
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: The southeast end of the brass foundry building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** West
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: The north gate was located on 14th Avenue.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** East
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: View of the fence along 14th Avenue.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Southeast
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: View of the second gate along 14th Avenue.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** West
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: The parking area south of the main plant building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** South
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: The southeast gate to the alley was open at the time of the site assessment.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** North
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: A view of the alley to the north.



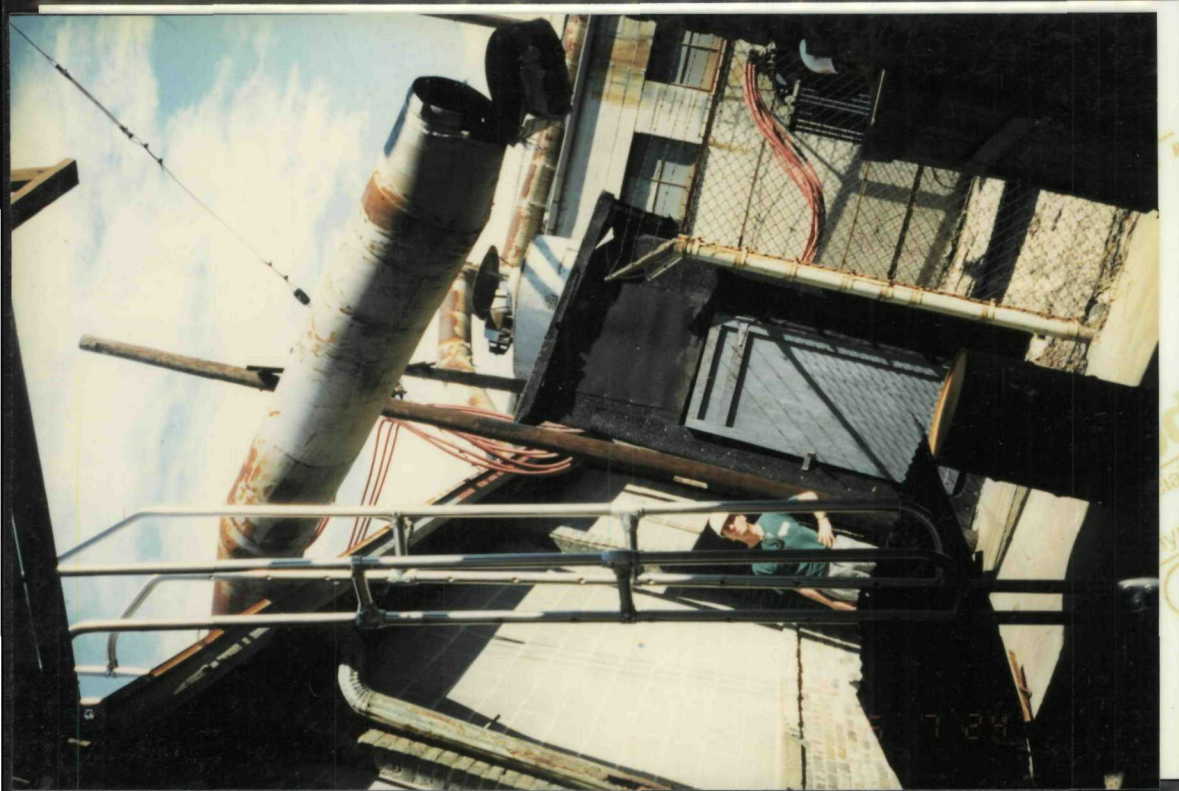
Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Southwest
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Three 55-gallon drums that have been tipped over in the alley on the east side of the main plant building. The drums spilled an oily liquid onto the concrete and into a drain in the alley. Note the large electrical transformers in background.



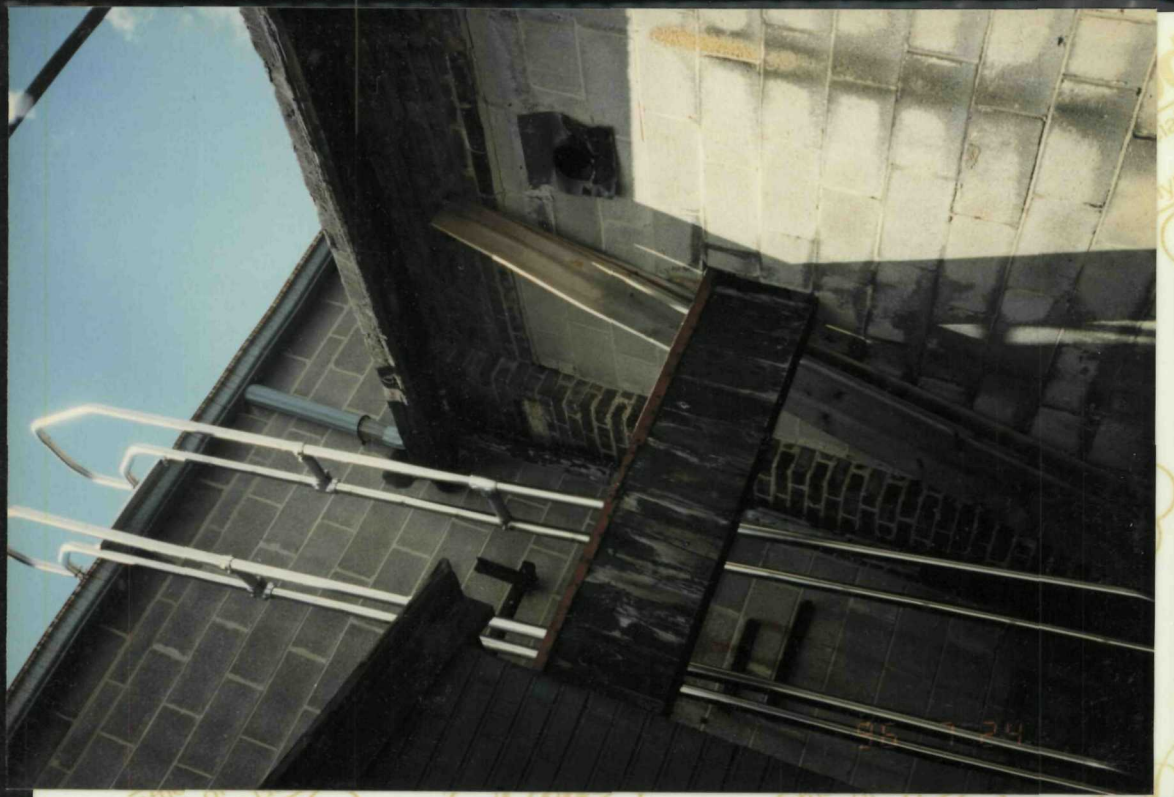
Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** East
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: 3,000-gallon vertical tank labeled "acid" located on the east side of the main plant building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** East
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: 2,500-gallon horizontal tank labeled "acid" located on the east side of the main plant building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** West
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: The pool ladder used to gain access to the roof of the main plant building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Southwest
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: A second pool ladder used to gain access to the roof of the main plant building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** West
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Two large transformers located on the east side of the main plant building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** East
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Eighteen 55-gallon drums of unknown contents located in a shed east of the main plant building.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** East
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: The north side of the main plant building.



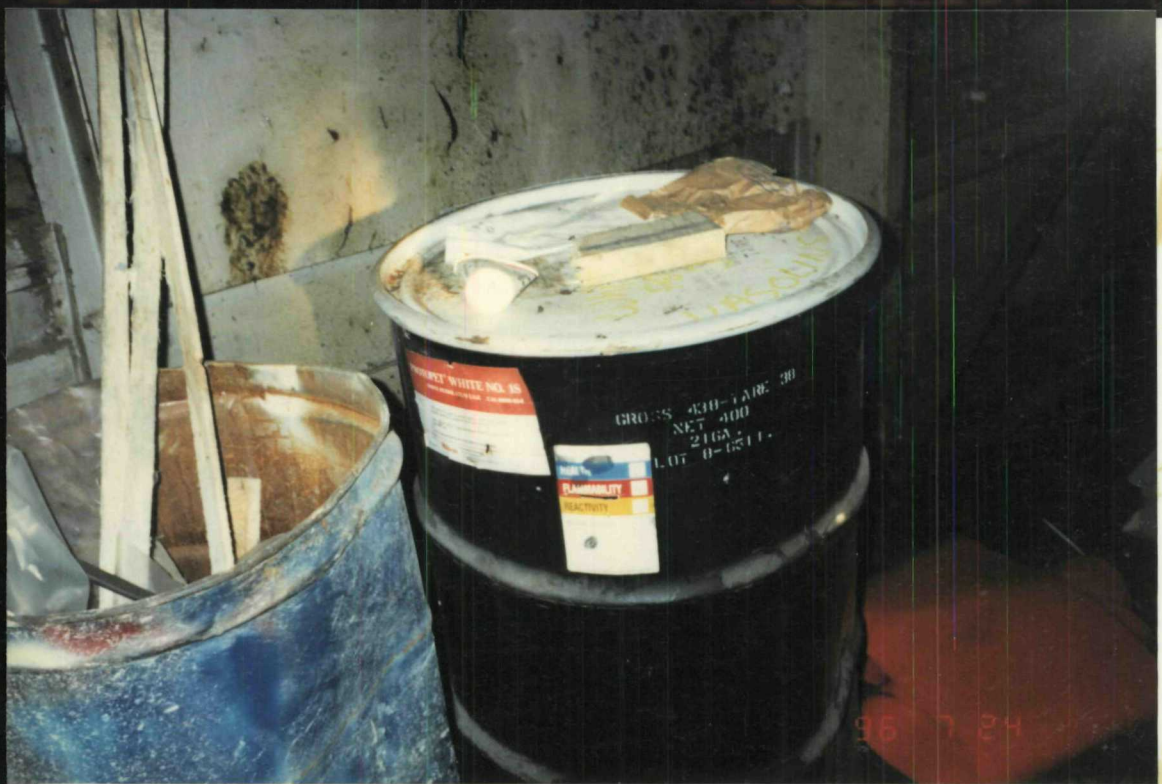
Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Unknown
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Thirty 55-gallon drums located in the main plant. Three of the drums had been tipped over by vandals, spilling the drums' contents.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** North

Camera: Olympus Infinity 35mm **Photographer:** J. Nordine

Subject: Seventeen 55-gallon drums and four 5-gallon pails located in the old water treatment area of the main plant building.



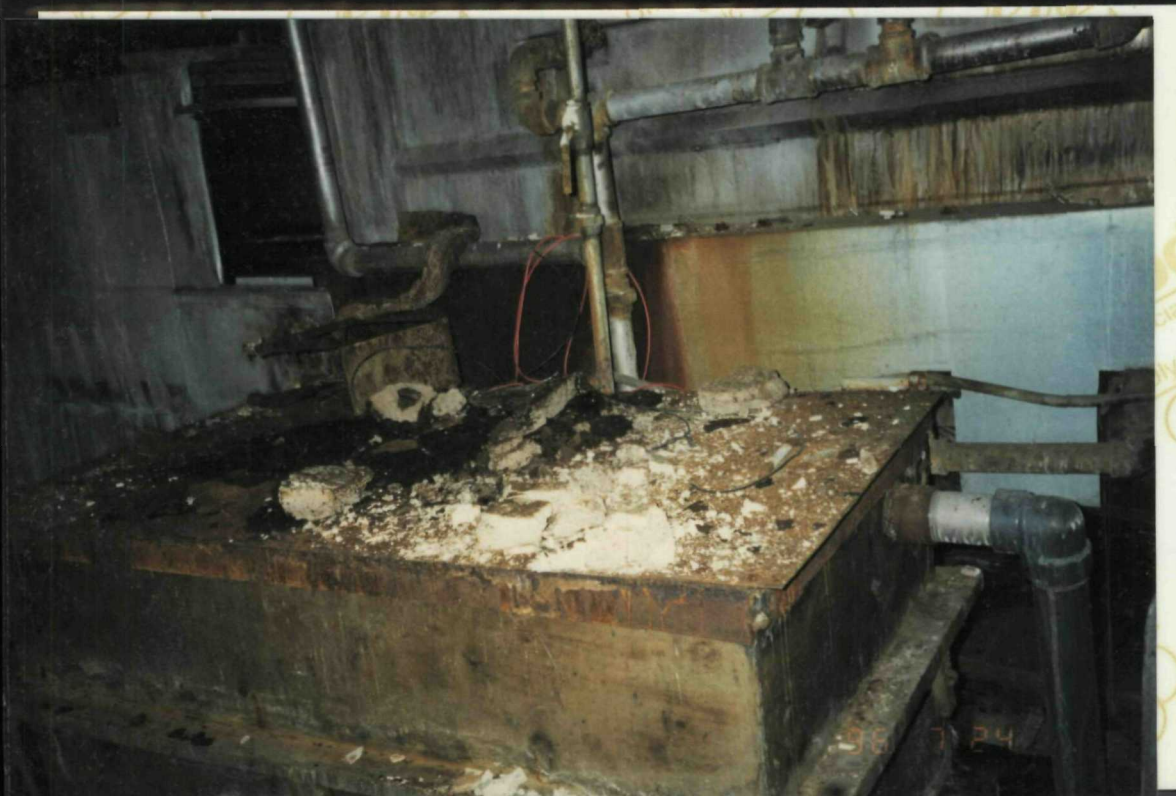
Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Unknown

Camera: Olympus Infinity 35mm **Photographer:** J. Nordine

Subject: 55-gallon drum labeled "Protopet White No. 1S, White Petroleum USP Case# 8009-03-8."



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Unknown
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: One of several pits filled with unknown liquids in the main plant.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** East
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Friable material fallen from the ceiling located near the annealing furnace. Sample A1 was collected from this material.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Up
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Friable ceiling material located above the annealing furnace.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** South
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: View of the south side of the plating area.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** North
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: View of the north side of the plating area.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** North
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: View of the northeast side of the plating area.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Northwest
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: White substance that was spilled on the plating room floor.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** West
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Bright green liquid spilled from piping in the plating room.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** Down
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Sump located in the plating room. Sample V2 was collected from the liquid in the sump.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** North
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Sample S1 collected from a yellow powder that had been spilled near the plating room.



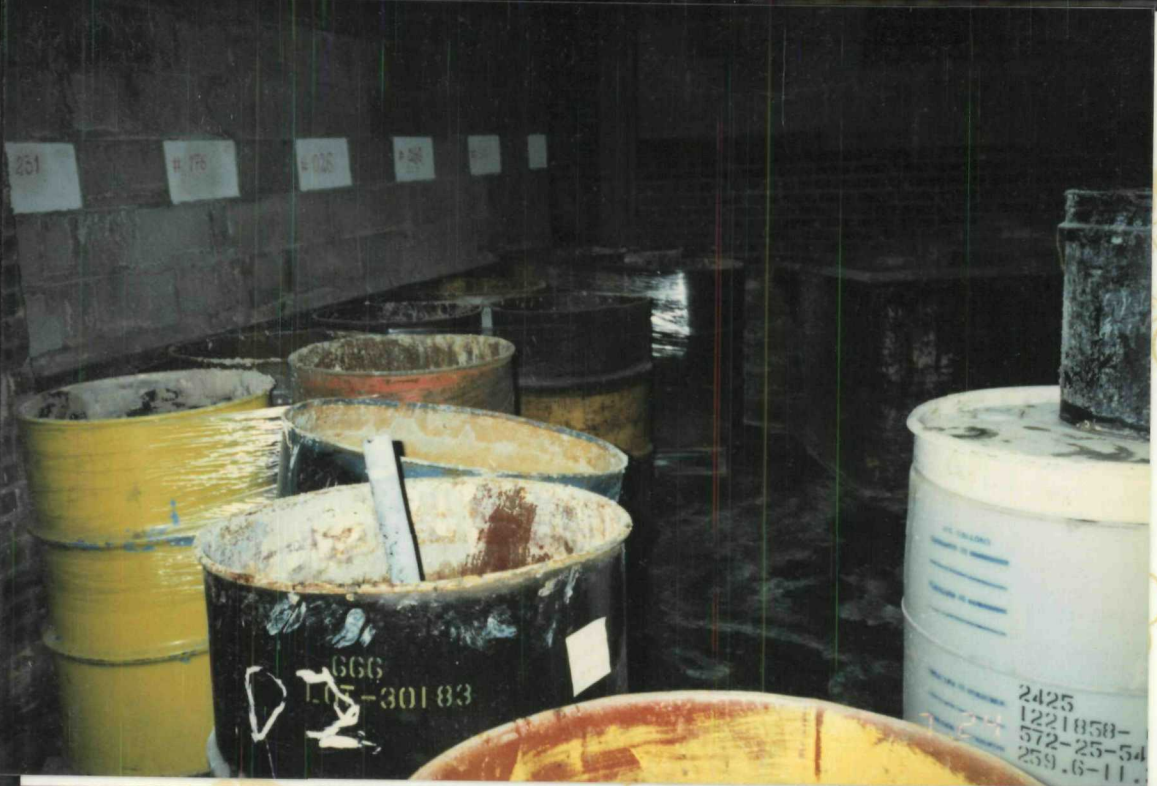
Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** ---
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Sample S2 was collected from plating solids from the raceways in the plating room.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** ---
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Sample S4 was collected from solids that spilled from a drum.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** ---
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Sample D1 was collected from a liquid in this drum.



Site: Frost Manufacturing Company **Date:** 7-24-96 **Direction:** ---
Camera: Olympus Infinity 35mm **Photographer:** J. Nordine
Subject: Sample D2 was collected from a liquid from this drum.

Appendix B

Analytical Results



ecology and environment, inc.

International Specialists in the Environment

33 North Dearborn Street
Chicago, Illinois 60602
Tel. 312/578-9243, Fax: 312/578-9345

M E M O R A N D U M

DATE: September 11, 1996

TO: John Nordine, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Assistant START Program Manager, E & E, Chicago, Illinois

SUBJECT: Inorganic Data Quality Review for Toxicity Characteristic Leaching Procedure (TCLP) Chromium and Lead, Frost Manufacturing, Kenosha, Kenosha County, Wisconsin

REFERENCE: Project TDD S05-9606-022 Analytical TDD S05-9607-807
Project PAN 6N2201SIXX Analytical PAN 6UAG01TA

The data quality assurance (QA) review of four solid samples collected from the Frost Manufacturing site is complete. The samples were collected on July 24, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to V.O.C. Analytical, Naperville, Illinois. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Methods 1311 and 6010.

Sample Identification

START Identification No.

S1
S2
S3
S4

Laboratory Identification No.

L9328-1
L9328-2
L9328-3
L9328-4

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on July 24, 1996, and analyzed on August 16, 1996. This is within the 6-month holding time limit.

II. Calibration:

• Initial Calibration: Acceptable

Recoveries for the initial calibration verification were within 90 to 110%, as required.

• Continuing Calibration: Acceptable

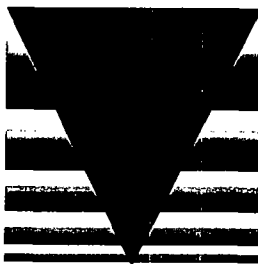
All analytes included in the continuing calibration verification standard were within 90 to 110%, as required.

III. Blanks: Acceptable

Calibration and preparation blanks were analyzed with each analytical batch. No target analytes were detected in the blanks.

IV. Overall Assessment of Data For Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) Data Validation Procedures, Section 3.0, Metallic Inorganic Parameters. Based upon the information provided, the data are acceptable for use.



Our Quality Control Is Your Quality Assurance

RECEIVED

AUG 22 1996

Ecology & Environment, Inc.

Client #: CHI-96-031103
Address: Ecology and Environment, Inc.
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: David Hendren

Page: Page 1 of 1
Date: 08/19/96
Log #: L9328-1

Sample Description:

GN2201; J05-9607-807
Relog of L8736

Label: S1
Date Sampled: 07/24/96
Time Sampled: 00:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
ACLP Metals							
Chromium	0.35	mg/l	1311/6010	0.010	08/14/96	08/16/96	SH
Lead	BDL	mg/l	1311/6010	0.050	08/14/96	08/16/96	SH

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

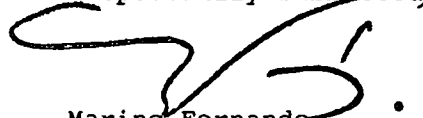
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted


Marino Fernandez
Laboratory Director

L9328-1

Client #: CHI-96-031103
Address: Ecology and Environment, Inc.
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: David Hendren

Page: Page 1 of 1
Date: 08/19/96
Log #: L9328-2

Sample Description:

GN2201; J05-9607-807
Relog of L8736

Label: S2
Date Sampled: 07/24/96
Time Sampled: 00:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
TCLP Metals							
Chromium	0.60	mg/l	1311/6010	0.010	08/14/96	08/16/96	SH

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,


Marino Fernandez
Laboratory Director

L9328-2

Client #: CHI-96-031103
Address: Ecology and Environment, Inc.
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: David Hendren

Page: Page 1 of 1
Date: 08/19/96
Log #: L9328-3

Sample Description:

GN2201; J05-9607-807
Relog of L8736

Label: S3
Date Sampled: 07/24/96
Time Sampled: 00:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
TCLP Metals							
Chromium	400	mg/l	1311/6010	0.010	08/14/96	08/16/96	SH

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

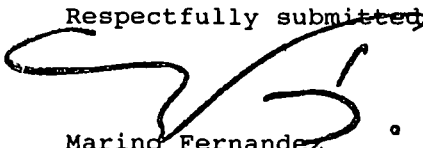
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# A20529
USACE CERT

Respectfully submitted,


Marino Fernandez
Laboratory Director

L9328-3

Client #: CHI-96-031103
Address: Ecology and Environment, Inc.
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: David Hendren

Page: Page 1 of 1
Date: 08/19/96
Log #: L9328-4

Sample Description:

GN2201; J05-9607-807
Relog of L8736

Label: S4
Date Sampled: 07/24/96
Time Sampled: 00:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
TCLP Metals							
Chromium	BDL	mg/l	1311/6010	0.010	08/14/96	08/16/96	SH
Lead	BDL	mg/l	1311/6010	0.050	08/14/96	08/16/96	SH

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

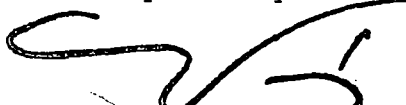
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,


Mario Fernandez
Laboratory Director

L9328-4



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International Specialists in the Environment

33 North Dearborn Street
Chicago, Illinois 60602
Tel. 312/578-9243, Fax: 312/578-9345

M E M O R A N D U M

DATE: September 2, 1996

TO: John Nordine, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Assistant START Program Manager, E & E, Chicago, Illinois

SUBJECT: Organic Data Quality Review for Volatile Organic Compounds, Frost Manufacturing, Kenosha, Kenosha County, Wisconsin

REFERENCE: Project TDD S05-9606-022 Analytical TDD S05-9607-807
Project PAN 6N2201SIXX Analytical PAN 6UAG01TA

The data quality assurance (QA) review of two liquid waste samples collected from the Frost Manufacturing site is complete. The samples were collected on July 24, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to V.O.C. Analytical, Naperville, Illinois. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8240.

Sample Identification

<u>START Identification No.</u>	<u>Laboratory Identification No.</u>
V1	L8736-1
V2	L8736-2

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on July 24, 1996, and analyzed on July 31, 1996. This is within the 14-day holding time limit.

II. Gas Chromatography/Mass Spectrometry (GC/MS) Tuning:
Acceptable

GC/MS tuning to meet ion abundance criteria using bromofluorobenzene (BFB) were acceptable and samples were analyzed within 12 hours of BFB tuning.

III. Calibrations:

• Initial Calibration: Acceptable

A five-point initial calibration was performed prior to analysis. All average response factors were greater than 0.05. The percent relative standard deviations (%RSDs) between response factors were less than 30% for all detected target compounds.

• Continuing Calibration: Acceptable

The percent differences of the response factors were less than 25%, as required for detected target compounds.

IV. Blank: Acceptable

A method blank was analyzed with the samples. No target compounds or contaminants were detected in the blank.

V. Internal Standards: Acceptable

The areas of the internal standards in the samples were within -50% to +100% of the associated calibration check standard. The retention time of the internal standard was within the 30-second control limit.

VI. Compound Identification: Qualified

The mass spectra of detected target compounds was not provided by the laboratory; therefore, all reported compound have been qualified "N".

VII. Additional QC Checks: Acceptable

The recoveries of the surrogates used in the samples and blank were within laboratory-established guidelines.

Frost Manufacturing
Project TDD S05-9506-022
Analytical TDD S05-9607-807
VOA
Page 3

VIII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 5.0, VOAs By GC/MS analysis. Based upon the information provided, the data are acceptable for use, with the above-stated qualifications.

Data Qualifiers and Definitions:

N - Presumptive evidence of presence of material.



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Chicago, Illinois 60602
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M E M O R A N D U M

DATE: September 2, 1996

TO: John Nordine, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Assistant START Program Manager, E & E, Chicago, Illinois

SUBJECT: Organic Data Quality Review for Semivolatile Organic Compounds, Frost Manufacturing, Kenosha, Kenosha County, Wisconsin

REFERENCE: Project TDD S05-9606-022 Analytical TDD S05-9607-807
Project PAN 6N2201SIXX Analytical PAN 6UAG01TA

The data quality assurance (QA) review of four liquid and one solid waste samples collected from the Frost Manufacturing site is complete. The samples were collected on July 24, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to V.O.C. Analytical, Naperville, Illinois. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8270.

Sample Identification

<u>START</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
V1	L8736-1
V2	L8736-2
S4	L8736-7
D1	L8736-8
D2	L8736-9

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on July 24, 1996, extracted on July 31, 1996, and analyzed on August 2, 1996. Sample S4 was analyzed on August 7, 1996. This is within the 14-day holding time limit, from collection to extraction and 40-day limit from extraction to analysis.

II. Gas Chromatography/Mass Spectrometry (GC/MS) Tuning: Acceptable

GC/MS tuning to meet ion abundance criteria using decafluorotriphenylphosphine (DFTPP) were acceptable and samples were analyzed within 12 hours of DFTPP tuning.

III. Calibrations:

Initial Calibration: Qualified

A five-point initial calibration was performed prior to analysis. All average response factors were greater than 0.05 except benzidine; therefore, the nondetect values for this compound have been flagged "R", as required. The percent relative standard deviations (%RSDs) between response factors were less than 30% for all detected target compounds.

Continuing Calibration: Acceptable

The percent differences of the response factors were less than 25%, as required for detected target compounds.

IV. Blank: Acceptable

A method blank was analyzed with the samples. No target compounds or contaminants were detected in the blank.

V. Internal Standards: Acceptable

The areas of the internal standards in the samples were within -50% to +100% of the associated calibration check standard. The retention time of the internal standard was within the 30-second control limit.

VI. Compound Identification: Qualified

The mass spectra of detected target compounds were not provided by the laboratory; therefore all reported compounds have been qualified "N".

VII. Additional QC Checks: Acceptable

The recoveries of the surrogates used in the samples and blank were within laboratory-established guidelines.

VIII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 4.0 BNAs By GC/MS analysis. Based upon the information provided, the data are acceptable for use, with the above-stated qualifications.

Data Qualifiers and Definitions:

N - Presumptive evidence of presence of material.

R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.



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International Specialists in the Environment

33 North Dearborn Street
Chicago, Illinois 60602
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M E M O R A N D U M

DATE: September 2, 1996

TO: John Nordine, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Assistant START Program Manager, E & E, Chicago, Illinois

SUBJECT: Inorganic Data Quality Review for Resource Conservation and Recovery Act (RCRA) Metals; Frost Manufacturing, Kenosha, Kenosha County, Wisconsin

REFERENCE: Project TDD S05-9606-022 Analytical TDD S05-9607-807
Project PAN 6N2201SIXX Analytical PAN 6UAG01TA

The data quality assurance (QA) review of four liquid and four solid samples collected from the Frost Manufacturing site is complete. The samples were collected on July 24, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to V.O.C. Analytical, Naperville, Illinois. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Methods 6010 and 7471.

Sample Identification

<u>START</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
V1	L8736-1
V2	L8736-2
S1	L8736-4
S2	L8736-5
S3	L8736-6
S4	L8736-7
D1	L8736-8
D2	L8736-9

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on July 24, 1996, and analyzed on July 27 to 29, 1996. Analysis for mercury was performed on July 16, 1996. This is within the 6-month (28 days for mercury) holding time limit.

II. Calibration:

• Initial Calibration: Acceptable

Recoveries for the initial calibration verification were within 90 to 110% (80 to 120% for mercury), as required. The correlation coefficient for mercury exceeded 0.995.

• Continuing Calibration: Acceptable

All analytes included in the continuing calibration verification standard were within 90 to 110% (80 to 120% for mercury), as required.

III. Blanks: Acceptable

Calibration and preparation blanks were analyzed with each analytical batch. No target analytes were detected in the blanks.

IV. Overall Assessment of Data For Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) Data Validation Procedures, Section 3.0, Metallic Inorganic Parameters. Based upon the information provided, the data are acceptable for use.



ecology and environment, inc.

International Specialists in the Environment

33 North Dearborn Street
Chicago, Illinois 60602
Tel. 312/578-9243, Fax: 312/578-9345

M E M O R A N D U M

DATE: September 2, 1996

TO: John Nordine, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Assistant START Program Manager, E & E, Chicago, Illinois

SUBJECT: Miscellaneous Data Quality Review for pH and Asbestos, Frost Manufacturing, Kenosha, Kenosha County, Wisconsin

REFERENCE: Project TDD S05-9606-022 Analytical TDD S05-9607-807
Project PAN 6N2201SIXX Analytical PAN 6UAG01TA

The data quality assurance (QA) review of four liquid and four solid samples collected from the Frost Manufacturing site is complete. The samples were collected on July 24, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to V.O.C. Analytical, Naperville, Illinois. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 9045 and EPA method 150.1.

Sample Identification

<u>START</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
V1	L8736-1
V2	L8736-2
S1	L8736-4
S2	L8736-5
S3	L8736-6
S4	L8736-7
D1	L8736-8
D2	L8736-9

Frost Manufacturing
Project TDD S05-9506-022
Analytical TDD S05-9607-807
pH, Asbestos
Page 2

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on July 24, 1996, and analyzed on August 7, 1996. The Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) does not provide holding times for these parameters.

II. Overall Assessment of Data For Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Data Validation Procedures, Section 9.0, Generic Data Validation Procedures. Based upon the information provided, the data are acceptable for use.



ecology and environment, inc.

International Specialists in the Environment

33 North Dearborn Street
Chicago, Illinois 60602
Tel. 312/578-9243, Fax: 312/578-9345

M E M O R A N D U M

DATE: September 2, 1996

TO: John Nordine, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Assistant START Program Manager, E & E, Chicago, Illinois

SUBJECT: Inorganic Data Quality Review for Cyanide, Frost Manufacturing, Kenosha, Kenosha County, Wisconsin

REFERENCE: Project TDD S05-9606-022 Analytical TDD S05-9607-807
Project PAN 6N2201SIXX Analytical PAN 6UAG01TA

The data quality assurance (QA) review of two liquid and one solid samples collected from the Frost Manufacturing site is complete. The samples were collected on July 24, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to V.O.C. Analytical, Naperville, Illinois. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Method 335.3.

Sample Identification

<u>START Identification No.</u>	<u>Laboratory Identification No.</u>
V1	L8736-1
V2	L8736-2
S4	L8736-7

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on July 24, 1996, and analyzed on August 7, 1996. This is within the 14-day holding time.

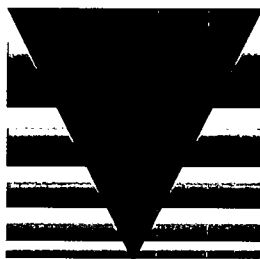
Frost Manufacturing
Project TDD S05-9506-022
Analytical TDD S05-9607-807
Cyanide
Page 2

II. Calibration: Acceptable

The correlation coefficient of the initial calibration curve exceeded 0.995. Recoveries of continuing calibrations were within 85-110%.

III. Overall Assessment of Data For Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) Data Validation Procedures, Section 3.0, Metallic Inorganic Parameters. Based upon the information provided, the data are acceptable for use.



Our Quality Control Is Your Quality Assurance

Client #: CHI-96-031104
Address: Ecology and Environment
Ecology and Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

Page: Page 1 of 6
Date: 08/09/96
Log #: L8736-1

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V1 Sump-H2O Treat
Date Sampled: 07/24/96
Time Sampled: 13:30
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semi-Volatile Organic Compounds							
N,N-Dimethylamine	BDL	ug/l	3510/8270	190	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	160	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	250	07/31/96	08/02/96	EP
Bis(2-bromoethyl) Ether	BDL	ug/l	3510/8270	170	07/31/96	08/02/96	EP
2-Chlorophenol	BDL	ug/l	3510/8270	170	07/31/96	08/02/96	EP
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	260	07/31/96	08/02/96	EP
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	180	07/31/96	08/02/96	EP
Benzyl Alcohol	BDL	ug/l	3510/8270	220	07/31/96	08/02/96	EP
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	280	07/31/96	08/02/96	EP
2-Methylphenol	BDL	ug/l	3510/8270	120	07/31/96	08/02/96	EP
Bis(2-chloroisopropyl) Ether	BDL	ug/l	3510/8270	880	07/31/96	08/02/96	EP
N,N-Di-n-propylamine	BDL	ug/l	3510/8270	290	07/31/96	08/02/96	EP
4-Methylphenol	BDL	ug/l	3510/8270	210	07/31/96	08/02/96	EP
Hexachloroethane	BDL	ug/l	3510/8270	220	07/31/96	08/02/96	EP
Nitrobenzene	BDL	ug/l	3510/8270	170	07/31/96	08/02/96	EP
Isophorone	BDL	ug/l	3510/8270	230	07/31/96	08/02/96	EP
2-Nitrophenol	BDL	ug/l	3510/8270	210	07/31/96	08/02/96	EP
2,4-Dimethyl Phenol	BDL	ug/l	3510/8270	110	07/31/96	08/02/96	EP
Bis(2-chloroethoxy) Methane	BDL	ug/l	3510/8270	150	07/31/96	08/02/96	EP
Benzoic Acid	BDL	ug/l	3510/8270	2000	07/31/96	08/02/96	EP
N,N-Diethylamine	BDL	ug/l	3510/8270	280	07/31/96	08/02/96	EP
2,4-Dichlorophenol	BDL	ug/l	3510/8270	260	07/31/96	08/02/96	EP
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	130	07/31/96	08/02/96	EP
Naphthalene	BDL	ug/l	3510/8270	230	07/31/96	08/02/96	EP
4-Chloroaniline	BDL	ug/l	3510/8270	670	07/31/96	08/02/96	EP

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Page: Page 2 of 6
Date: 08/09/96
Log #: L8736-1

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V1 Sump-H2O Treat
Date Sampled: 07/24/96
Time Sampled: 13:30
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semi-Volatile Organic Compounds (continued)							
Isobutadiene	BDL	ug/l	3510/8270	190	07/31/96	08/02/96	EP
2,3-Dimethylphenol	BDL	ug/l	3510/8270	120	07/31/96	08/02/96	EP
1-Naphthalene	BDL	ug/l	3510/8270	120	07/31/96	08/02/96	EP
2-Naphthalene	BDL	ug/l	3510/8270	260	07/31/96	08/02/96	EP
1,2-Cyclopentadiene	BDL	ug/l	3510/8270	340	07/31/96	08/02/96	EP
2,4-Dichlorophenol	BDL	ug/l	3510/8270	210	07/31/96	08/02/96	EP
2,5-Dichlorophenol	BDL	ug/l	3510/8270	500	07/31/96	08/02/96	EP
1-Naphthalene	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
2-Nitroaniline	BDL	ug/l	3510/8270	220	07/31/96	08/02/96	EP
Dimethylphthalate	BDL	ug/l	3510/8270	150	07/31/96	08/02/96	EP
2,6-Dinitrotoluene	BDL	ug/l	3510/8270	220	07/31/96	08/02/96	EP
Acenaphthylene	BDL	ug/l	3510/8270	170	07/31/96	08/02/96	EP
3-Nitroaniline	BDL	ug/l	3510/8270	1000	07/31/96	08/02/96	EP
Acenaphthene	BDL	ug/l	3510/8270	120	07/31/96	08/02/96	EP
Dibenzofuran	BDL	ug/l	3510/8270	130	07/31/96	08/02/96	EP
2,4-Dinitrotoluene	BDL	ug/l	3510/8270	2000	07/31/96	08/02/96	EP
2,4-Dinitrophenol	BDL	ug/l	3510/8270	2000	07/31/96	08/02/96	EP
4-Nitrophenol	BDL	ug/l	3510/8270	2000	07/31/96	08/02/96	EP
Diethylphthalate	BDL	ug/l	3510/8270	910	07/31/96	08/02/96	EP
Fluorene	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
4-Chlorophenyl-phenylether	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
4-Nitroaniline	BDL	ug/l	3510/8270	2000	07/31/96	08/02/96	EP
4,6-Dinitro-2-Methylphenol	BDL	ug/l	3510/8270	2000	07/31/96	08/02/96	EP
N-Nitrosodiphenylamine	BDL	ug/l	3510/8270	190	07/31/96	08/02/96	EP
Azobenzene	BDL	ug/l	3510/8270	120	07/31/96	08/02/96	EP
4-Bromophenyl-phenylether	BDL	ug/l	3510/8270	210	07/31/96	08/02/96	EP
alpha-BHC	BDL	ug/l	3510/8270	150	07/31/96	08/02/96	EP
Hexachlorobenzene	BDL	ug/l	3510/8270	160	07/31/96	08/02/96	EP
Pentachlorophenol	BDL	ug/l	3510/8270	1000	07/31/96	08/02/96	EP
gamma-BHC	BDL	ug/l	3510/8270	140	07/31/96	08/02/96	EP
beta-BHC	BDL	ug/l	3510/8270	210	07/31/96	08/02/96	EP
Phenanthrene	BDL	ug/l	3510/8270	120	07/31/96	08/02/96	EP
Anthracene	BDL	ug/l	3510/8270	160	07/31/96	08/02/96	EP
delta-BHC	BDL	ug/l	3510/8270	140	07/31/96	08/02/96	EP
Carbazole	BDL	ug/l	3510/8270	1000	07/31/96	08/02/96	EP
Heptachlor	BDL	ug/l	3510/8270	210	07/31/96	08/02/96	EP

Client #: CHI-96-031104
Address: Ecology and Environment
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111 W. Jackson Blvd.
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Attn: Dave Hendren

Page: Page 3 of 6
Date: 08/09/96
Log #: L8736-1

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V1 Sump-H2O Treat
Date Sampled: 07/24/96
Time Sampled: 13:30
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semi-Volatile Organic Compounds (continued)							
Di-n-butylphthalate	BDL	ug/l	3510/8270	160	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	220	07/31/96	08/02/96	EP
Endrin	BDL	ug/l	3510/8270	150	07/31/96	08/02/96	EP
Heptachlor Epoxide	BDL	ug/l	3510/8270	240	07/31/96	08/02/96	EP
	BDL R	ug/l	3510/8270	2000	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	120	07/31/96	08/02/96	EP
Endosulfan I	BDL	ug/l	3510/8270	340	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	370	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	230	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	220	07/31/96	08/02/96	EP
Endosulfan II	BDL	ug/l	3510/8270	1100	07/31/96	08/02/96	EP
Endrin Aldehyde	BDL	ug/l	3510/8270	1600	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
Di-n-octylphthalate	BDL	ug/l	3510/8270	120	07/31/96	08/02/96	EP
Endrin Sulfate	BDL	ug/l	3510/8270	130	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	210	07/31/96	08/02/96	EP
Endrin Ketone	BDL	ug/l	3510/8270	1000	07/31/96	08/02/96	EP
Benzo(a)anthracene	BDL	ug/l	3510/8270	120	07/31/96	08/02/96	EP
3,3'-Dichlorobenzidine	BDL	ug/l	3510/8270	480	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	150	07/31/96	08/02/96	EP
1,2-Diphenylhydrazine	BDL	ug/l	3510/8270	110	07/31/96	08/02/96	EP
Bis(2-ethylhexyl) Phthalate	2300 N	ug/l	3510/8270	600	07/31/96	08/02/96	EP
Di-n-octyl phthalate	240 N	ug/l	3510/8270	240	07/31/96	08/02/96	EP
Benzo(b)fluoranthene	BDL	ug/l	3510/8270	590	07/31/96	08/02/96	EP
Benzo(k)fluoranthene	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
Benzo(a)pyrene	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
Indeno(1,2,3-c,d)pyrene	BDL	ug/l	3510/8270	520	07/31/96	08/02/96	EP
Dibenzo(a,h)Anthracene	BDL	ug/l	3510/8270	690	07/31/96	08/02/96	EP
Benzo(g,h,i)perylene	BDL	ug/l	3510/8270	520	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	6000	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	6000	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	6000	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	6000	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	6000	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	6000	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	2000	07/31/96	08/02/96	EP

Client #: CHI-96-031104
Address: Ecology and Environment
Ecology and Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

Page: Page 4 of 6
Date: 08/09/96
Log #: L8736-1

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V1 Sump-H2O Treat
Date Sampled: 07/24/96
Time Sampled: 13:30
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
Semivolatile Organic Compounds (continued)							
Toxaphene	BDL	ug/l	3510/8270	4000	07/31/96	08/02/96	EP
Dilution Factor	100		3510/8270		07/31/96	08/02/96	EP
Metals							
Arsenic	BDL	mg/l	3010/6010A	10	07/29/96	07/29/96	JK
Barium	5.4	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Cadmium	BDL	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Chromium	540	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Lead	57	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Mercury	0.11	mg/l	245.2	0.10	07/29/96	07/31/96	JK
Selenium	BDL	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Silver	BDL	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Volatile Organic Compounds							
Dichlorodifluoromethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Ethanol	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Chloromethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Vinyl Chloride	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Bromomethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Chloroethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Trichlorofluoromethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Acrolein	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,1-Dichloroethene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Acetone	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Iodomethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Carbon Disulfide	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Methylene Chloride	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Acrylonitrile	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Trans-1,2-dichloroethene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,1-Dichloroethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Vinyl Acetate	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
2-Butanone	0.13 ^N	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Chloroform	0.0060 ^N	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,1,1-Trichloroethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Carbon Tetrachloride	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Benzene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS

Client #: CHI-96-031104
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Date: 08/09/96
Log #: L8736-1

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V1 Sump-H2O Treat
Date Sampled: 07/24/96
Time Sampled: 13:30
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Volatile Organic Compounds (continued)							
1,2-Dichloroethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Trichloroethene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,2-Dichloropropane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Dibromomethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Bromodichloromethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
2-Chloroethylvinyl Ether	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Cis-1,3-Dichloropropene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
4-Methyl-2-pentanone	0.080 N	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Toluene	0.080 N	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Trans-1,3-Dichloropropene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Ethyl Methacrylate	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,1,2-Trichloroethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
2-Hexanone	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Dibromochloromethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Chlorobenzene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Ethylbenzene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Total Xylenes	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Styrene	0.0090 N	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Bromoform	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Cis-1,4-dichloro-2-butene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,1,2,2-Tetrachloroethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,2,3-Trichloropropane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Trans-1,4-dichloro-2-butene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
MTBE	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,1,1,2-Tetrachloroethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Cis-1,2-Dichloroethene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Tetrachloroethene	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,2-Dibromoethane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
1,2-Dibromo-3-Chloropropane	BDL	mg/kg	5030/8240	0.0050	07/31/96	07/31/96	KS
Dilution Factor	1.0		5030/8240		07/31/96	07/31/96	KS
General Chemistry							
Cyanide	BDL	mg/l	335.3	0.010	08/07/96	08/07/96	INO
pH	3.0		150.1	0.10	08/07/96	08/07/96	INO

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Attn: Dave Hendren

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Date: 08/09/96
Log #: L8736-1

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V1 Sump-H2O Treat
Date Sampled: 07/24/96
Time Sampled: 13:30
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr.	Analysis	Analyst
				Detect Limit			

General Chemistry (continued)

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

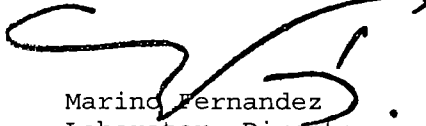
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,


Marino Fernandez
Laboratory Director

L8736-1

Client #: CHI-96-031104
 Address: Ecology and Environment
 Ecology and Environment
 111 W. Jackson Blvd.
 Chicago, IL 60604
 Attn: Dave Hendren

Page: Page 1 of 6
 Date: 08/09/96
 Log #: L8736-2

Sample Description:

6N2201 J05-9607-807
 KJ5100

Label: V2 Sump-Plating
 Date Sampled: 07/24/96
 Time Sampled: 14:00
 Date Received: 07/25/96
 Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
Semivolatile Organic Compounds							
N-Nitrosodimethylamine	BDL	ug/l	3510/8270	19	07/31/96	08/02/96	EP
Aniline	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
Phenol	BDL	ug/l	3510/8270	25	07/31/96	08/02/96	EP
Bis(2-Chloroethyl) Ether	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
2-Chlorophenol	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	26	07/31/96	08/02/96	EP
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	18	07/31/96	08/02/96	EP
Benzyl alcohol	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	28	07/31/96	08/02/96	EP
2-Methylphenol	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Bis(2-Chloroisopropyl) Ethe	BDL	ug/l	3510/8270	88	07/31/96	08/02/96	EP
N-Nitrosodi-n-propylamine	BDL	ug/l	3510/8270	29	07/31/96	08/02/96	EP
4-Methylphenol	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
Hexachloroethane	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Nitrobenzene	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
Isophorone	BDL	ug/l	3510/8270	23	07/31/96	08/02/96	EP
2-Nitrophenol	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
2,4-Dimethyl Phenol	BDL	ug/l	3510/8270	11	07/31/96	08/02/96	EP
Bis(2-Chloroethoxy) Methane	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
Benzoic Acid	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
N-Nitrosodiethylamine	BDL	ug/l	3510/8270	28	07/31/96	08/02/96	EP
2,4-Dichlorophenol	BDL	ug/l	3510/8270	26	07/31/96	08/02/96	EP
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	13	07/31/96	08/02/96	EP
Naphthalene	BDL	ug/l	3510/8270	23	07/31/96	08/02/96	EP
4-Chloroaniline	BDL	ug/l	3510/8270	67	07/31/96	08/02/96	EP

Client #: CHI-96-031104
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111 W. Jackson Blvd.
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Attn: Dave Hendren

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Date: 08/09/96
Log #: L8736-2

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V2 Sump-Plating
Date Sampled: 07/24/96
Time Sampled: 14:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semi-Volatile Organic Compounds (continued)							
Isobutadiene	BDL	ug/l	3510/8270	19	07/31/96	08/02/96	EP
2,3-Methylphenol	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
1-Naphthalene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
2-Naphthalene	BDL	ug/l	3510/8270	26	07/31/96	08/02/96	EP
1,2-Dicyclopentadiene	BDL	ug/l	3510/8270	34	07/31/96	08/02/96	EP
2,4-Dichlorophenol	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
2,5-Dichlorophenol	BDL	ug/l	3510/8270	50	07/31/96	08/02/96	EP
1-Naphthalene	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
2-Nitroaniline	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Dimethylphthalate	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
2,6-Dinitrotoluene	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Acenaphthylene	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
3-Nitroaniline	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
Acenaphthene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Dibenzofuran	BDL	ug/l	3510/8270	13	07/31/96	08/02/96	EP
2,4-Dinitrotoluene	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
2,4-Dinitrophenol	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
4-Nitrophenol	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
Diethylphthalate	BDL	ug/l	3510/8270	91	07/31/96	08/02/96	EP
Fluorene	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
4-Chlorophenyl-phenylether	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
4-Nitroaniline	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
4,6-Dinitro-2-Methylphenol	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
N-Nitrosodiphenylamine	BDL	ug/l	3510/8270	19	07/31/96	08/02/96	EP
Azobenzene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
4-Bromophenyl-phenylether	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
alpha-BHC	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
Hexachlorobenzene	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
Pentachlorophenol	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
gamma-BHC	BDL	ug/l	3510/8270	14	07/31/96	08/02/96	EP
beta-BHC	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
Phenanthrene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Anthracene	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
delta-BHC	BDL	ug/l	3510/8270	14	07/31/96	08/02/96	EP
Carbazole	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
Heptachlor	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP

Client #: CHI-96-031104
Address: Ecology and Environment
Ecology and Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

Page: Page 3 of 6
Date: 08/09/96
Log #: L8736-2

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V2 Sump-Plating
Date Sampled: 07/24/96
Time Sampled: 14:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
File Organic Compounds (continued)							
lphthalate	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
ene	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
r Epoxide	BDL	ug/l	3510/8270	24	07/31/96	08/02/96	EP
	BDL R	ug/l	3510/8270	200	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
n I	BDL	ug/l	3510/8270	34	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	37	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	23	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
n II	BDL	ug/l	3510/8270	110	07/31/96	08/02/96	EP
dehyde	BDL	ug/l	3510/8270	160	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	20	07/31/96	08/02/96	EP
ylphthalate	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
n Sulfate	BDL	ug/l	3510/8270	13	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
tone	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
anthracene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
lorobenzidine	BDL	ug/l	3510/8270	48	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
nylhydrazine	BDL	ug/l	3510/8270	11	07/31/96	08/02/96	EP
ylhexyl)Phthalate	BDL	ug/l	3510/8270	60	07/31/96	08/02/96	EP
l phthalate	BDL	ug/l	3510/8270	25	07/31/96	08/02/96	EP
luoranthene	BDL	ug/l	3510/8270	59	07/31/96	08/02/96	EP
luoranthene	BDL	ug/l	3510/8270	20	07/31/96	08/02/96	EP
ylene	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
2,3-c,d)pyrene	BDL	ug/l	3510/8270	52	07/31/96	08/02/96	EP
,h)Anthracene	BDL	ug/l	3510/8270	69	07/31/96	08/02/96	EP
,i)perylene	BDL	ug/l	3510/8270	52	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP

Client #: CHI-96-031104
Address: Ecology and Environment
Ecology and Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

Page: Page 4 of 6
Date: 08/09/96
Log #: L8736-2

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V2 Sump-Plating
Date Sampled: 07/24/96
Time Sampled: 14:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
Semivolatile Organic Compounds (continued)							
Toxaphene	BDL	ug/l	3510/8270	400	07/31/96	08/02/96	EP
Dilution Factor	10		3510/8270		07/31/96	08/02/96	EP
Volatile Organic Compounds							
Dichlorodifluoromethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Ethanol	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Chloromethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Vinyl Chloride	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Bromomethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Chloroethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Trichlorofluoromethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Acrolein	BDL	ug/l	5030/8240	10	07/31/96	07/31/96	KS
1,1-Dichloroethene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Acetone	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Iodomethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Carbon Disulfide	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Methylene Chloride	BDL	ug/l	5030/8240	4.0	07/31/96	07/31/96	KS
Acrylonitrile	BDL	ug/l	5030/8240	10	07/31/96	07/31/96	KS
Trans-1,2-dichloroethene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,1-Dichloroethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Vinyl Acetate	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
2-Butanone	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Chloroform	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,1,1-Trichloroethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Carbon Tetrachloride	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Benzene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,2-Dichloroethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Trichloroethene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,2-Dichloropropane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Dibromomethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Bromodichloromethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
2-Chloroethylvinyl Ether	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Cis-1,3-Dichloropropene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
4-Methyl-2-pentanone	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Toluene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Trans-1,3-Dichloropropene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS

Client #: CHI-96-031104
Address: Ecology and Environment
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111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

Page: Page 5 of 6
Date: 08/09/96
Log #: L8736-2

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V2 Sump-Plating
Date Sampled: 07/24/96
Time Sampled: 14:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Volatile Organic Compounds (continued)							
Ethyl Methacrylate	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,1,2-Trichloroethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
2-Hexanone	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Dibromochloromethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Chlorobenzene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Ethylbenzene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Total Xylenes	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Styrene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Bromoform	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Cis-1,4-dichloro-2-butene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,1,2,2-Tetrachloroethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,2,3-Trichloropropane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Trans-1,4-dichloro-2-butene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
MTBE	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,1,1,2-Tetrachloroethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Cis-1,2-Dichloroethene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Tetrachloroethene	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,2-Dibromoethane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
1,2-Dibromo-3-Chloropropane	BDL	ug/l	5030/8240	1.0	07/31/96	07/31/96	KS
Dilution Factor	1.0		5030/8240		07/31/96	07/31/96	KS
General Chemistry							
Cyanide	BDL	mg/l	335.3	0.010	08/07/96	08/07/96	INO

Client #: CHI-96-031104
Address: Ecology and Environment
Ecology and Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

Page: Page 6 of 6
Date: 08/09/96
Log #: L8736-2

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: V2 Sump-Plating
Date Sampled: 07/24/96
Time Sampled: 14:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr.	Analysis	Analyst
				Detect Limit			

General Chemistry (continued)

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

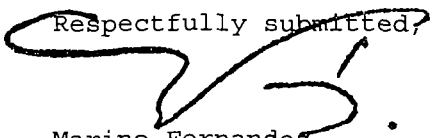
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,


Marino Fernandez
Laboratory Director

L8736-2



Our Quality Control Is Your Quality Assurance

Client #: CHI-96-031104
Address: Ecology & Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: David Hendren

Page: Page 1 of 1
Date: 08/08/96
Log#: L8736-3

Sample Description:

Bulk Asbestos ID

Label: A1
Date Sampled: 07/24/96
Time Sampled: 14:10
Date Received: 07/25/96
Collected By: Client
Extraction Date: 07/30/96
Analysis Date: 07/30/96

Description	Present	Method	Homogeneous sample	% Cellulose	% Nonfibrous Material	% Fibrous Glass	Color
Ceiling tile	no	EPA-600/PLM	No	20-25%	70-75%	2-5%	cream

Respectfully submitted,

Marino Fernandez
Laboratory Director

Client #: CHI-96-031104
Address: Ecology and Environment
Ecology and Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

Page: Page 1 of 1
Date: 08/09/96
Log #: L8736-4

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: S1 Yellow Powder
Date Sampled: 07/24/96
Time Sampled: 14:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
	13	mg/kg	3050/6010	5.0	07/27/96	07/31/96	JK
	270	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
	3.8	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
	1600	mg/kg	3050/6010	1.0	07/27/96	07/31/96	JK
	700	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
	BDL	mg/kg	7471	0.10	07/27/96	07/31/96	JK
	BDL	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
	1.4	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
Chemistry							
	4.5		9045	0.10	08/07/96	08/07/96	INO

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,

Marino Fernandez
Laboratory Director

L8736-4

Client #: CHI-96-031104
Address: Ecology and Environment
Ecology and Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

Page: Page 1 of 1
Date: 08/09/96
Log #: L8736-5

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: S2 Plating Room FL
Date Sampled: 07/24/96
Time Sampled: 14:15
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Metals	14	mg/kg	3050/6010	5.0	07/27/96	07/31/96	JK
	49	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
	BDL	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
	3500	mg/kg	3050/6010	1.0	07/27/96	07/31/96	JK
	130	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
	BDL	mg/kg	7471	0.10	07/27/96	07/31/96	JK
	BDL	mg/kg	3050/6010A	10	07/27/96	07/29/96	JK
	BDL	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
	Chemistry	1.0		9045	0.10	08/07/96	08/07/96

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,

Marino Fernandez
Laboratory Director

L8736-5

Client #: CHI-96-031104
Address: Ecology and Environment
Ecology and Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

Page: Page 1 of 1
Date: 08/09/96
Log #: L8736-6

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: S3 Drum Spill Area
Date Sampled: 07/24/96
Time Sampled: 15:00
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Metals							
Arsenic	46	mg/kg	3050/6010	5.0	07/27/96	07/31/96	JK
Barium	1.5	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
Cadmium	BDL	mg/kg	3050/6010A	5.0	07/27/96	07/29/96	JK
Chromium	6900	mg/kg	3050/6010	1.0	07/27/96	07/31/96	JK
Lead	50	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
Mercury	0.18	mg/kg	7471	0.10	07/27/96	07/31/96	JK
Selenium	BDL	mg/kg	3050/6010A	10	07/27/96	07/29/96	JK
Silver	1.3	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
General Chemistry							
pH	0.00		9045	0.10	08/07/96	08/07/96	INO

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,

Marino Fernandez
Laboratory Director

L8736-6

Client #: CHI-96-031104
Address: Ecology and Environment
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Chicago, IL 60604
Attn: Dave Hendren

Page: Page 1 of 4
Date: 08/09/96
Log #: L8736-7

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: S4 Drum Spill Area
Date Sampled: 07/24/96
Time Sampled: 15:15
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semi-Volatile Organic Compounds							
N,N-Dimethylamine	BDL	mg/kg	3550/8270	0.33	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
Diethyl Ether	BDL	mg/kg	3550/8270	0.17	08/06/96	08/07/96	EP
Phenol	BDL	mg/kg	3550/8270	0.27	08/06/96	08/07/96	EP
Chlorobenzene	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
Bromobenzene	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
Methanol	BDL	mg/kg	3550/8270	0.26	08/06/96	08/07/96	EP
1,2-Dichlorobenzene	BDL	mg/kg	3550/8270	2.1	08/06/96	08/07/96	EP
2-Methylphenol	BDL	mg/kg	3550/8270	0.39	08/06/96	08/07/96	EP
Bis(isopropyl) Ether	BDL	mg/kg	3550/8270	0.35	08/06/96	08/07/96	EP
N,N-Di-n-propylamine	BDL	mg/kg	3550/8270	0.59	08/06/96	08/07/96	EP
4-Methylphenol	BDL	mg/kg	3550/8270	0.42	08/06/96	08/07/96	EP
Hexachloroethane	BDL	mg/kg	3550/8270	0.28	08/06/96	08/07/96	EP
Nitrobenzene	BDL	mg/kg	3550/8270	0.26	08/06/96	08/07/96	EP
Isophorone	BDL	mg/kg	3550/8270	0.27	08/06/96	08/07/96	EP
2-Nitrophenol	BDL	mg/kg	3550/8270	0.21	08/06/96	08/07/96	EP
2,4-Dimethyl Phenol	BDL	mg/kg	3550/8270	0.20	08/06/96	08/07/96	EP
Bis(2-chloroethoxy) Methane	BDL	mg/kg	3550/8270	0.15	08/06/96	08/07/96	EP
Benzoic Acid	BDL	mg/kg	3550/8270	0.50	08/06/96	08/07/96	EP
N,N-Diethylamine	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
2,4-Dichlorophenol	BDL	mg/kg	3550/8270	0.14	08/06/96	08/07/96	EP
1,2,4-Trichlorobenzene	BDL	mg/kg	3550/8270	0.49	08/06/96	08/07/96	EP
Naphthalene	BDL	mg/kg	3550/8270	0.16	08/06/96	08/07/96	EP
4-Chloroaniline	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP

Client #: CHI-96-031104
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Chicago, IL 60604
Attn: Dave Hendren

Page: Page 2 of 4
Date: 08/09/96
Log #: L8736-7

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: S4 Drum Spill Area
Date Sampled: 07/24/96
Time Sampled: 15:15
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semi-Volatile Organic Compounds (continued)							
Isobutadiene	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
3-Methylphenol	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
1-Naphthalene	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
2-Naphthalene	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
Cyclopentadiene	BDL	mg/kg	3550/8270	0.32	08/06/96	08/07/96	EP
2-Chlorophenol	BDL	mg/kg	3550/8270	0.20	08/06/96	08/07/96	EP
4-Chlorophenol	BDL	mg/kg	3550/8270	0.19	08/06/96	08/07/96	EP
1-Naphthalene	BDL	mg/kg	3550/8270	0.25	08/06/96	08/07/96	EP
Aniline	BDL	mg/kg	3550/8270	0.31	08/06/96	08/07/96	EP
Phthalate	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
o-Toluene	BDL	mg/kg	3550/8270	0.14	08/06/96	08/07/96	EP
Styrene	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
Aniline	BDL	mg/kg	3550/8270	0.23	08/06/96	08/07/96	EP
Phenol	BDL	mg/kg	3550/8270	0.26	08/06/96	08/07/96	EP
o-Toluen	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
o-Toluene	BDL	mg/kg	3550/8270	0.15	08/06/96	08/07/96	EP
o-Phenol	BDL	mg/kg	3550/8270	0.60	08/06/96	08/07/96	EP
Phenol	BDL	mg/kg	3550/8270	0.18	08/06/96	08/07/96	EP
Phthalate	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.25	08/06/96	08/07/96	EP
Phenyl-phenylether	BDL	mg/kg	3550/8270	0.16	08/06/96	08/07/96	EP
Aniline	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
o-2-Methylphenol	BDL	mg/kg	3550/8270	0.26	08/06/96	08/07/96	EP
Diphenylamine	BDL	mg/kg	3550/8270	0.28	08/06/96	08/07/96	EP
Phenyl-phenylether	BDL	mg/kg	3550/8270	0.36	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.70	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.66	08/06/96	08/07/96	EP
Phenylbenzene	BDL	mg/kg	3550/8270	0.25	08/06/96	08/07/96	EP
o-Phenol	BDL	mg/kg	3550/8270	0.29	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.40	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.15	08/06/96	08/07/96	EP
Phenylbenzene	BDL	mg/kg	3550/8270	0.15	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.20	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.16	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.20	08/06/96	08/07/96	EP
	BDL	mg/kg	3550/8270	0.44	08/06/96	08/07/96	EP

Client #: CHI-96-031104
Address: Ecology and Environment
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111 W. Jackson Blvd.
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Attn: Dave Hendren

Page: Page 3 of 4
Date: 08/09/96
Log #: L8736-7

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: S4 Drum Spill Area
Date Sampled: 07/24/96
Time Sampled: 15:15
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
Semivolatile Organic Compounds (continued)							
Di-n-butylphthalate	BDL	mg/kg	3550/8270	0.21	08/06/96	08/07/96	EP
Aldrin	BDL	mg/kg	3550/8270	0.16	08/06/96	08/07/96	EP
Fluoranthene	BDL	mg/kg	3550/8270	0.34	08/06/96	08/07/96	EP
Heptachlor Epoxide	BDL	mg/kg	3550/8270	0.27	08/06/96	08/07/96	EP
Benzidine	BDL R	mg/kg	3550/8270	0.27	08/06/96	08/07/96	EP
Pyrene	BDL	mg/kg	3550/8270	0.39	08/06/96	08/07/96	EP
Endosulfan I	BDL	mg/kg	3550/8270	0.50	08/06/96	08/07/96	EP
4,4'-DDE	BDL	mg/kg	3550/8270	0.12	08/06/96	08/07/96	EP
Dieldrin	BDL	mg/kg	3550/8270	0.17	08/06/96	08/07/96	EP
4,4'-DDD	BDL	mg/kg	3550/8270	0.57	08/06/96	08/07/96	EP
Endosulfan II	BDL	mg/kg	3550/8270	0.30	08/06/96	08/07/96	EP
Endrin Aldehyde	BDL	mg/kg	3550/8270	0.25	08/06/96	08/07/96	EP
Endrin	BDL	mg/kg	3550/8270	0.22	08/06/96	08/07/96	EP
Butylbenzylphthalate	BDL	mg/kg	3550/8270	0.26	08/06/96	08/07/96	EP
Endosulfan Sulfate	BDL	mg/kg	3550/8270	0.24	08/06/96	08/07/96	EP
4,4'-DDT	BDL	mg/kg	3550/8270	0.18	08/06/96	08/07/96	EP
Endrin Ketone	BDL	mg/kg	3550/8270	0.20	08/06/96	08/07/96	EP
Benzo(a)anthracene	BDL	mg/kg	3550/8270	0.51	08/06/96	08/07/96	EP
3,3'-Dichlorobenzidine	BDL	mg/kg	3550/8270	0.52	08/06/96	08/07/96	EP
Chrysene	BDL	mg/kg	3550/8270	0.22	08/06/96	08/07/96	EP
1,2-Diphenylhydrazine	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
Bis(2-Ethylhexyl) Phthalate	4.5 N	mg/kg	3550/8270	0.51	08/06/96	08/07/96	EP
Di-n-octyl phthalate	BDL	mg/kg	3550/8270	0.22	08/06/96	08/07/96	EP
Benzo(b)fluoranthene	BDL	mg/kg	3550/8270	0.42	08/06/96	08/07/96	EP
Benzo(k)fluoranthene	BDL	mg/kg	3550/8270	0.54	08/06/96	08/07/96	EP
Benzo(a)pyrene	BDL	mg/kg	3550/8270	0.28	08/06/96	08/07/96	EP
Indeno(1,2,3-c,d)pyrene	BDL	mg/kg	3550/8270	0.24	08/06/96	08/07/96	EP
Dibenzo(a,h)Anthracene	BDL	mg/kg	3550/8270	0.77	08/06/96	08/07/96	EP
Benzo(g,h,i)perylene	BDL	mg/kg	3550/8270	0.10	08/06/96	08/07/96	EP
PCB 1016	BDL	mg/kg	3550/8270	2.0	08/06/96	08/07/96	EP
PCB 1221	BDL	mg/kg	3550/8270	2.0	08/06/96	08/07/96	EP
PCB 1232	BDL	mg/kg	3550/8270	2.0	08/06/96	08/07/96	EP
PCB 1242	BDL	mg/kg	3550/8270	2.0	08/06/96	08/07/96	EP
PCB 1254	BDL	mg/kg	3550/8270	2.0	08/06/96	08/07/96	EP
PCB 1260	BDL	mg/kg	3550/8270	2.0	08/06/96	08/07/96	EP
Chlordane	BDL	mg/kg	3550/8270	0.67	08/06/96	08/07/96	EP

Client #: CHI-96-031104
Address: Ecology and Environment
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111 W. Jackson Blvd.
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Attn: Dave Hendren

Page: Page 4 of 4
Date: 08/09/96
Log #: L8736-7

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: S4 Drum Spill Area
Date Sampled: 07/24/96
Time Sampled: 15:15
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
Semivolatile Organic Compounds (continued)							
Toxaphene	BDL	mg/kg	3550/8270	1.5	08/06/96	08/07/96	EP
Dilution Factor	1.0		3550/8270		08/06/96	08/07/96	EP
Metals							
Arsenic	15	mg/kg	3050/6010	5.0	07/27/96	07/31/96	JK
Barium	43	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
Cadmium	BDL	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
Chromium	4000	mg/kg	3050/6010	1.0	07/27/96	07/31/96	JK
Lead	950	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
Mercury	BDL	mg/kg	7471	0.10	07/27/96	07/31/96	JK
Selenium	BDL	mg/kg	3050/6010A	10	07/27/96	07/29/96	JK
Silver	BDL	mg/kg	3050/6010A	1.0	07/27/96	07/29/96	JK
General Chemistry							
Cyanide	BDL	mg/kg	335.3	0.10	08/07/96	08/07/96	INO

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900375G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,

Marino Fernandez
Laboratory Director

L8736-7

Client #: CHI-96-031104
 Address: Ecology and Environment
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 Chicago, IL 60604
 Attn: Dave Hendren

Page: Page 1 of 4
 Date: 08/09/96
 Log #: L8736-8

Sample Description:

6N2201 J05-9607-807
 KJ5100

Label: D1 Drum: 55 Gal BLK
 Date Sampled: 07/24/96
 Time Sampled: 14:45
 Date Received: 07/25/96
 Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semivolatile Organic Compounds							
N-Nitrosodimethylamine	BDL	ug/l	3510/8270	19	07/31/96	08/02/96	EP
Aniline	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
Phenol	BDL	ug/l	3510/8270	25	07/31/96	08/02/96	EP
Bis(2-Chloroethyl) Ether	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
2-Chlorophenol	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	26	07/31/96	08/02/96	EP
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	18	07/31/96	08/02/96	EP
Benzyl alcohol	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	28	07/31/96	08/02/96	EP
2-Methylphenol	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Bis(2-Chloroisopropyl) Ethe	BDL	ug/l	3510/8270	88	07/31/96	08/02/96	EP
N-Nitrosodi-n-propylamine	BDL	ug/l	3510/8270	29	07/31/96	08/02/96	EP
4-Methylphenol	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
Hexachloroethane	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Nitrobenzene	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
Isophorone	BDL	ug/l	3510/8270	23	07/31/96	08/02/96	EP
2-Nitrophenol	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
2,4-Dimethyl Phenol	BDL	ug/l	3510/8270	11	07/31/96	08/02/96	EP
Bis(2-Chloroethoxy) Methane	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
Benzoic Acid	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
N-Nitrosodiethylamine	BDL	ug/l	3510/8270	28	07/31/96	08/02/96	EP
2,4-Dichlorophenol	BDL	ug/l	3510/8270	26	07/31/96	08/02/96	EP
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	13	07/31/96	08/02/96	EP
Naphthalene	BDL	ug/l	3510/8270	23	07/31/96	08/02/96	EP
4-Chloroaniline	BDL	ug/l	3510/8270	67	07/31/96	08/02/96	EP

Client #: CHI-96-031104
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 Chicago, IL 60604
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Page: Page 2 of 4
 Date: 08/09/96
 Log #: L8736-8

Sample Description:

6N2201 J05-9607-807
 KJ5100

Label: D1 Drum: 55 Gal BLK
 Date Sampled: 07/24/96
 Time Sampled: 14:45
 Date Received: 07/25/96
 Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
Semivolatile Organic Compounds (continued)							
Hexachlorobutadiene	BDL	ug/l	3510/8270	19	07/31/96	08/02/96	EP
4-Chloro-3-Methylphenol	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
1-Methylnaphthalene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
2-Methylnaphthalene	BDL	ug/l	3510/8270	26	07/31/96	08/02/96	EP
Hexachlorocyclopentadiene	BDL	ug/l	3510/8270	34	07/31/96	08/02/96	EP
2,4,6-Trichlorophenol	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
2,4,5-Trichlorophenol	BDL	ug/l	3510/8270	50	07/31/96	08/02/96	EP
2-Chloronaphthalene	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
2-Nitroaniline	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Dimethylphthalate	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
2,6-Dinitrotoluene	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Acenaphthylene	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
3-Nitroaniline	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
Acenaphthene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Dibenzofuran	BDL	ug/l	3510/8270	13	07/31/96	08/02/96	EP
2,4-Dinitrotoluene	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
2,4-Dinitrophenol	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
4-Nitrophenol	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
Diethylphthalate	BDL	ug/l	3510/8270	91	07/31/96	08/02/96	EP
Fluorene	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
4-Chlorophenyl-phenylether	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
4-Nitroaniline	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
4,6-Dinitro-2-Methylphenol	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
N-Nitrosodiphenylamine	BDL	ug/l	3510/8270	19	07/31/96	08/02/96	EP
Azobenzene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
4-Bromophenyl-phenylether	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
alpha-BHC	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
Hexachlorobenzene	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
Pentachlorophenol	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
gamma-BHC	BDL	ug/l	3510/8270	14	07/31/96	08/02/96	EP
beta-BHC	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
Phenanthrene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Anthracene	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
delta-BHC	BDL	ug/l	3510/8270	14	07/31/96	08/02/96	EP
Carbazole	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
Heptachlor	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP

Client #: CHI-96-031104
Address: Ecology and Environment
Ecology and Environment
111 W. Jackson Blvd.
Chicago, IL 60604
Attn: Dave Hendren

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Date: 08/09/96
Log #: L8736-8

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: D1 Drum: 55 Gal BLK
Date Sampled: 07/24/96
Time Sampled: 14:45
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
Semivolatile Organic Compounds (continued)							
Di-n-butylphthalate	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
Aldrin	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Fluoranthene	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
Heptachlor Epoxide	BDL	ug/l	3510/8270	24	07/31/96	08/02/96	EP
Benzidine	BDL R	ug/l	3510/8270	200	07/31/96	08/02/96	EP
Pyrene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Endosulfan I	BDL	ug/l	3510/8270	34	07/31/96	08/02/96	EP
4,4'-DDE	BDL	ug/l	3510/8270	37	07/31/96	08/02/96	EP
Dieldrin	BDL	ug/l	3510/8270	23	07/31/96	08/02/96	EP
4,4'-DDD	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Endosulfan II	BDL	ug/l	3510/8270	110	07/31/96	08/02/96	EP
Endrin Aldehyde	BDL	ug/l	3510/8270	160	07/31/96	08/02/96	EP
Endrin	BDL	ug/l	3510/8270	20	07/31/96	08/02/96	EP
Butylbenzylphthalate	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Endosulfan Sulfate	BDL	ug/l	3510/8270	13	07/31/96	08/02/96	EP
4,4'-DDT	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
Endrin Ketone	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
Benzo(a)anthracene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
3,3'-Dichlorobenzidine	BDL	ug/l	3510/8270	48	07/31/96	08/02/96	EP
Chrysene	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
1,2-Diphenylhydrazine	BDL	ug/l	3510/8270	11	07/31/96	08/02/96	EP
Bis(2-Ethylhexyl) Phthalate	130 N	ug/l	3510/8270	60	07/31/96	08/02/96	EP
Di-n-octyl phthalate	BDL	ug/l	3510/8270	25	07/31/96	08/02/96	EP
Benzo(b)fluoranthene	BDL	ug/l	3510/8270	59	07/31/96	08/02/96	EP
Benzo(k)fluoranthene	BDL	ug/l	3510/8270	20	07/31/96	08/02/96	EP
Benzo(a)pyrene	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
Indeno(1,2,3-c,d)pyrene	BDL	ug/l	3510/8270	52	07/31/96	08/02/96	EP
Dibenzo(a,h)Anthracene	BDL	ug/l	3510/8270	69	07/31/96	08/02/96	EP
Benzo(g,h,i)perylene	BDL	ug/l	3510/8270	52	07/31/96	08/02/96	EP
PCB 1016	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1221	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1232	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1242	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1254	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1260	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
Chlordane	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP

Client #: CHI-96-031104
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Date: 08/09/96
Log #: L8736-8

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: D1 Drum: 55 Gal BLK
Date Sampled: 07/24/96
Time Sampled: 14:45
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
Semivolatile Organic Compounds (continued)							
Toxaphene	BDL	ug/l	3510/8270	400	07/31/96	08/02/96	EP
Dilution Factor	10		3510/8270		07/31/96	08/02/96	EP
Metals							
Arsenic	BDL	mg/l	3010/6010A	20	07/29/96	07/29/96	JK
Barium	BDL	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Cadmium	BDL	mg/l	3010/6010A	2.0	07/29/96	07/29/96	JK
Chromium	9000	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Lead	BDL	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Mercury	BDL	mg/l	245.2	0.10	07/29/96	07/31/96	JK
Selenium	BDL	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
Silver	BDL	mg/l	3010/6010A	1.0	07/29/96	07/29/96	JK
General Chemistry							
pH	0.00		150.1	0.10	08/07/96	08/07/96	INO

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,

Marino Fernandez
Laboratory Director

L8736-8

Client #: CHI-96-031104
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 Chicago, IL 60604
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Page: Page 1 of 4
 Date: 08/09/96
 Log #: L8736-9

Sample Description:

6N2201 J05-9607-807
 KJ5100

Label: D2 Drum: 55 Gal BLK
 Date Sampled: 07/24/96
 Time Sampled: 15:15
 Date Received: 07/25/96
 Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semivolatile Organic Compounds							
N-Nitrosodimethylamine	BDL	ug/l	3510/8270	19	07/31/96	08/02/96	EP
Aniline	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
Phenol	BDL	ug/l	3510/8270	25	07/31/96	08/02/96	EP
Bis(2-Chloroethyl) Ether	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
2-Chlorophenol	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	26	07/31/96	08/02/96	EP
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	18	07/31/96	08/02/96	EP
Benzyl alcohol	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	28	07/31/96	08/02/96	EP
2-Methylphenol	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Bis(2-Chloroisopropyl) Ethe	BDL	ug/l	3510/8270	88	07/31/96	08/02/96	EP
N-Nitrosodi-n-propylamine	BDL	ug/l	3510/8270	29	07/31/96	08/02/96	EP
4-Methylphenol	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
Hexachloroethane	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Nitrobenzene	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
Isophorone	BDL	ug/l	3510/8270	23	07/31/96	08/02/96	EP
2-Nitrophenol	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
2,4-Dimethyl Phenol	BDL	ug/l	3510/8270	11	07/31/96	08/02/96	EP
Bis(2-Chloroethoxy) Methane	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
Benzoic Acid	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
N-Nitrosodiethylamine	BDL	ug/l	3510/8270	28	07/31/96	08/02/96	EP
2,4-Dichlorophenol	BDL	ug/l	3510/8270	26	07/31/96	08/02/96	EP
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	13	07/31/96	08/02/96	EP
Naphthalene	BDL	ug/l	3510/8270	23	07/31/96	08/02/96	EP
4-Chloroaniline	BDL	ug/l	3510/8270	67	07/31/96	08/02/96	EP

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Log #: L8736-9

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: D2 Drum: 55 Gal BLK
Date Sampled: 07/24/96
Time Sampled: 15:15
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semi-Volatile Organic Compounds (continued)							
Isobutadiene	BDL	ug/l	3510/8270	19	07/31/96	08/02/96	EP
3-Methylphenol	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Naphthalene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
1-Naphthalene	BDL	ug/l	3510/8270	26	07/31/96	08/02/96	EP
Cyclopentadiene	BDL	ug/l	3510/8270	34	07/31/96	08/02/96	EP
2-Chlorophenol	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
4-Chlorophenol	BDL	ug/l	3510/8270	50	07/31/96	08/02/96	EP
1-Naphthalene	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
Aniline	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Phthalate	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
o-Toluene	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Styrene	BDL	ug/l	3510/8270	17	07/31/96	08/02/96	EP
Aniline	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
Acetylene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Hexan	BDL	ug/l	3510/8270	13	07/31/96	08/02/96	EP
o-Toluene	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
o-Phenol	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
Phenol	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
Phthalate	BDL	ug/l	3510/8270	91	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
Phenyl-phenylether	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
Aniline	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
o-2-Methylphenol	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP
Diphenylamine	BDL	ug/l	3510/8270	19	07/31/96	08/02/96	EP
Acetylene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Phenyl-phenylether	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
Acetylene	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
o-Phenol	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	14	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
Acetylene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	14	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP

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 Date: 08/09/96
 Log #: L8736-9

Sample Description:

6N2201 J05-9607-807
 KJ5100

Label: D2 Drum: 55 Gal BLK
 Date Sampled: 07/24/96
 Time Sampled: 15:15
 Date Received: 07/25/96
 Collected By: Client

Parameter	Results	Units	Method	Reportable Detect Limit	Extr. Date	Analysis Date	Analyst
Semivolatile Organic Compounds (continued)							
Di-n-butylphthalate	BDL	ug/l	3510/8270	16	07/31/96	08/02/96	EP
Aldrin	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Fluoranthene	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
Heptachlor Epoxide	BDL	ug/l	3510/8270	24	07/31/96	08/02/96	EP
Benzidine	BDL R	ug/l	3510/8270	200	07/31/96	08/02/96	EP
Pyrene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Endosulfan I	BDL	ug/l	3510/8270	34	07/31/96	08/02/96	EP
4,4'-DDE	BDL	ug/l	3510/8270	37	07/31/96	08/02/96	EP
Dieldrin	BDL	ug/l	3510/8270	23	07/31/96	08/02/96	EP
4,4'-DDD	BDL	ug/l	3510/8270	22	07/31/96	08/02/96	EP
Endosulfan II	BDL	ug/l	3510/8270	110	07/31/96	08/02/96	EP
Endrin Aldehyde	BDL	ug/l	3510/8270	160	07/31/96	08/02/96	EP
Endrin	BDL	ug/l	3510/8270	20	07/31/96	08/02/96	EP
Butylbenzylphthalate	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
Endosulfan Sulfate	BDL	ug/l	3510/8270	13	07/31/96	08/02/96	EP
4,4'-DDT	BDL	ug/l	3510/8270	21	07/31/96	08/02/96	EP
Endrin Ketone	BDL	ug/l	3510/8270	100	07/31/96	08/02/96	EP
Benzo(a)anthracene	BDL	ug/l	3510/8270	12	07/31/96	08/02/96	EP
3,3'-Dichlorobenzidine	BDL	ug/l	3510/8270	48	07/31/96	08/02/96	EP
Chrysene	BDL	ug/l	3510/8270	15	07/31/96	08/02/96	EP
1,2-Diphenylhydrazine	BDL	ug/l	3510/8270	11	07/31/96	08/02/96	EP
Bis(2-Ethylhexyl) Phthalate	BDL	ug/l	3510/8270	60	07/31/96	08/02/96	EP
Di-n-octyl phthalate	BDL	ug/l	3510/8270	25	07/31/96	08/02/96	EP
Benzo(b)fluoranthene	BDL	ug/l	3510/8270	59	07/31/96	08/02/96	EP
Benzo(k)fluoranthene	BDL	ug/l	3510/8270	20	07/31/96	08/02/96	EP
Benzo(a)pyrene	BDL	ug/l	3510/8270	10	07/31/96	08/02/96	EP
Indeno(1,2,3-c,d)pyrene	BDL	ug/l	3510/8270	52	07/31/96	08/02/96	EP
Dibenzo(a,h)Anthracene	BDL	ug/l	3510/8270	69	07/31/96	08/02/96	EP
Benzo(g,h,i)perylene	BDL	ug/l	3510/8270	52	07/31/96	08/02/96	EP
PCB 1016	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1221	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1232	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1242	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1254	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
PCB 1260	BDL	ug/l	3510/8270	600	07/31/96	08/02/96	EP
Chlordane	BDL	ug/l	3510/8270	200	07/31/96	08/02/96	EP

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Date: 08/09/96
Log #: L8736-9

Sample Description:

6N2201 J05-9607-807
KJ5100

Label: D2 Drum: 55 Gal BLK
Date Sampled: 07/24/96
Time Sampled: 15:15
Date Received: 07/25/96
Collected By: Client

Parameter	Results	Units	Method	Reportable	Extr. Date	Analysis Date	Analyst
				Detect Limit			
Semivolatile Organic Compounds (continued)							
Toxaphene	BDL	ug/l	3510/8270	400	07/31/96	08/02/96	EP
Dilution Factor	10		3510/8270		07/31/96	08/02/96	EP
Metals							
Arsenic	BDL	mg/l	3010/6010A	0.10	07/29/96	08/01/96	JK
Barium	0.24	mg/l	3010/6010A	0.10	07/29/96	07/29/96	JK
Cadmium	BDL	mg/l	3010/6010A	0.10	07/29/96	07/29/96	JK
Chromium	19	mg/l	3010/6010A	0.10	07/29/96	08/01/96	JK
Lead	1.2	mg/l	3010/6010A	0.10	07/29/96	08/01/96	JK
Mercury	0.0041	mg/l	245.2	0.0010	07/29/96	07/31/96	JK
Selenium	BDL	mg/l	3010/6010A	0.10	07/29/96	07/29/96	JK
Silver	BDL	mg/l	3010/6010A	0.10	07/29/96	07/29/96	JK
General Chemistry							
pH	8.0		150.1	0.10	08/07/96	08/07/96	INO

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

QAP# 900376G
SUB HRS# 86122,86109,E86048
SC CERT# 96031
TN CERT# 02985
ELPAT# 13801
VA CERT# 00395
MA CERT# M-FL449
ND CERT# R-148

HRS# E86240,86356
ADEM ID# 40850
NC CERT# 444
CT CERT# PH-0122
CA CERT# I-1068
AZ CERT# AZ0529
USACE CERT

Respectfully submitted,

Marino Fernandez
Laboratory Director

L8736-9